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THE FLY IN THE OINTMENT

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THE Fly in the Ointment is a subject that was assigned me by your Secretary, and on which I am supposed to hang certain thoughts, the texture of which enters into an idea of far reaching importance and of much concern to health officials. The "fly" is partisan politics; the "ointment" is the kind of public health service that, properly applied, means the "healing of the nations." The task is to get the fly out of the ointment. The proposal is that this may be done with a thing which we call a "standard."

THE PRINCIPLE OF STANDARDIZATION

The dictionary says that a standard is "any measure of extent, quantity, quality or value established . . . by general usage and consent." Another idea involved in the term "standard" is that of a guide post. Looking back through history, it may be observed that these guide posts, standards, have checked off and measured the whole course of civilization. We measure quantity by standards called weights; we measure dimensions by standards called yard sticks and meters; we measure values by standards called dollars and pounds and francs. Language itself is a standardization of vocal sounds, the giving of definite values and meanings to vocal sounds. The printed page is a standardization of symbols by the giving to each of a definite or measured value. There are educational standards. Laws are based upon educational standards; appropriations are made to schools of certain grades; colleges are given public ratings and classifications in accordance with their approximation to certain educational standards. There are ethical standards. There are religious standards called creeds. What then in reality as well as in the dictionary sense do we mean by a standard? Here it is: A standard is an expression of group judgment. A standard makes possible the substitution of group judgment for individual opinion for weighing, measuring and evaluating a piece of work.

Every standard in its development must undergo a dangerous infancy. It always encounters plenty of opposition before it cuts its eye teeth. A study of

the development of any standard will bear out this statement. One of the most interesting pieces of reading, showing the initial opposition which standards always encounter, will be found in the files of the old newspapers of the forties and fifties when the proposition to standardize the practice of medicine, by requiring all practitioners to meet certain educational standards and tests, in short to pass a board of medical examiners, was under consideration. The newspapers of that day contained many letters opposing the idea. What a violation of sacred individual rights it was! Why should not a man be allowed to practice medicine if he wished to do so in this free country? And why shouldn't any citizen have the right to employ whom he pleased? And, after all, the practice of medicine depended upon a science which was undergoing rapid changes and concerning the teachings of which able men held different viewpoints. And, again, wasn't the practice of medicine dependent upon certain human qualities of the heart which no examination could plumb? What a foolish thing it seemed to even many wise men of their day to standardize the practice of medicine.

Somebody once proposed to reduce the sanitary conditions on dairy farms, the methods of milking the cows, etc., to a common basis of comparison, to a principle of standardization. What a foolish proposition when that idea was in swaddling clothes; but now how strong and beyond challenge it has grown to be. A few years ago there was undertaken a study of some 180 medical colleges scattered throughout this country, the idea being to create standards of medical education and involving, of course, the invidious and odious comparisons which the unfit so much detest and the fit so much desire. There was much opposition. The poor boy had rights; he could make a good doctor but could only afford a cheap school. The poor boy's rights stood out and for a while balanced the larger rights of the public, but standards for medical education emerged from the controversy, medicine leaped forward and commercialism in medical education disappeared.

The initial opposition to any proposal of standardization comes from two types of mind: One is the strict individualist who detests submergence of individual opinion in group thought and judgment. This type is strong for the preservation of identity, for the preservation of self, and has not learned the meaning of the lesson of the larger life that "he who will save his live shall lose it." The second type of individual who opposes standardization is the high minded idealist, the person who keeps his eyes fixed on the ideal, and fails to note the intermediate distance between. Because the proposed standard has its defects, is not perfect, he would have none of it. In health work, he is interested in diseases that are eradicable 100 per cent and finds little interest in a disease problem permitting 25 per cent eradication. The day of small things has no value to him. A government bond, with its 4 per cent, makes no appeal; 100 per cent or nothing.

THE USE OF PUBLIC HEALTH STANDARDS

Assuming that it will be possible for group judgment to consolidate and express itself in standards for measuring public health practices, how may such standards be used? They may have two uses: one for the individual health officer; another for the public.

In general it may be pointed out that the individual health officer could use a standard, that is, a yard stick or a pair of scales, to measure and weigh his work. In so doing there is no abridgment of his right to use his own opinion instead of collective professional judgment; there is no substitution of group judgment for individual judgment; the health officer simply has an additional and very valuable means of weighing the work of his department. In particular, it may be pointed out that the use of standards may serve the indi-

vidual health officer in five important uses. Group judgment instead of his own for determining the value of his work may be used both for defense and advance. For defense, for example, when under criticism, the health officer might say to his critics: "Here, by the scales used by the profession, not by my own opinion, is the measure and extent of my work, which, considered alongside of the appropriation which is available, shows up well." In taking that position, the health officer would know that the outside authorities who might be called in to investigate his work would arrive at practically the same conclusion as he had arrived at through the use of group judgment standards and that their findings would support him.

For an advance, for extending his lines of action, the professional standards would be of immense service when the health officer appeared before his mayor and finance bodies, his chamber of commerce and other civic organizations, and pointed out to them his department's weak divisions and asked their interest and support for such additional budgets and personnel as would enable him to bring up the rating of his department to favorable comparisons with other cities. The appeal to civic pride involved in the right use of professional standards would be most effective.

Still another important use that the individual health officer would make of standards in public health work is in the maintenance of a well balanced program. When organizations with special interests, when individual and civic organizations with influence, but with a fractional public health viewpoint, insisted on additions to the program, or on certain parts of the program being emphasized at the expense of others, the health officer is fortified with a careful expression of professional judgment in maintaining a balanced program based upon the bedrock principle of relative values.

All health officers, who have weathered the storm of the last ten years, when all sorts of national organizations with special interests, one in this disease, one in that, and another in still another, have tugged at their necessary general and balanced programs, will understand the full significance of this supporting use of standards representing the generalized professional judgment.

A fifth use that the individual health officer will make of an expression of group judgment as to relative values is in the coördination of the voluntary and unofficial health agencies of his city. He will be able to point out to these agencies what in their program has true professional value and what has a more or less fictitious value. He will be able in many cases to properly relate the unofficial voluntary agencies on the basis of a balanced program and to so align their activities with that of the health department as to coördinate the attack of both regulars and volunteers on the forces of disease. Only with such an understanding can the city obtain the best possible rating in health values.

The public use of professional standards for weighing, measuring and evaluating the official and unofficial health activities of cities will come about after these standards have been tried out through individual use and have had worked into them the experience of several years. When that time arrives, the health officials themselves, who accept group judgment, will probably agree that when the health activities of a city have been brought up to a certain number of points out of a thousand, say 800 points, that such a city may be placed in Class A, and so published in such national channels of information and influence as those of the American Public Health Association, the American Medical Association, the United States Chamber of Commerce and others with interest in city health conditions and municipal governments.

As the classification of medical colleges, based upon standards of medical education, lifted medical education from a commercial to a professional plane, so the public classification of city health departments, based upon professional standards,

will lift public health work from a political foundation to a professional one. This is the greatest present public health need. Many able men, who would enter the field of public health, and enroll themselves in the schools for public health training, now so limited in material, would at once be available for service if professional, and not political, considerations controlled appointment, remuneration and tenure of service. The foundations for public health must be made stable if we are to build largely and securely. Individual opinion and political interests, the quick and shifting sands of uncertainty upon which our house under present conditions insecurely rests, must be dug out and replaced with the crystallization and concrete expressions of group judgment.

THE CONSTRUCTION OF PUBLIC HEALTH STANDARDS

Before we can build a house, we must clear the site. Before we can construct standards in public health work, we must get rid of material that cannot be used in that construction. To that end, we must eliminate as unsuitable material for standards:

1. Methods of work
2. Provisions either in the form of (a) money or (b) personnel
3. Form of organization
4. Comparative mortality rates

We must not attempt to determine *how* a piece of work is carried on, but what is the end product; not *methods* but *results* of work. Individualism must be protected and allowed the utmost freedom in its choice of means and manipulation of means for obtaining results. To illustrate: a health officer may use one or several methods for securing prompt and complete reports of communicable diseases. With *how* he gets his diseases reported, the principle of standardization is not concerned, but it is concerned with whether he gets the diseases reported as indicated by so many cases per death from typhoid, diphtheria, scarlet fever, etc.

We cannot use provisions because, while provisions make possible work, they do not guarantee it, and one man may do with 50 cents per capita expenditure for health work more than another does with 75 cents per capita, or even $1.00 per capita.

We cannot use form of organization as a basis of standardization. One city may have a mayor and council; another a commission form of government; another a city manager. In one city the health officer may be appointed by the mayor and in another elected by a board of health. One city may use civil service in the selection of employees; another may not. An interesting fact brought out in the study of the cities surveyed in 1920 by the Committee on Municipal Health Department Practice was that the efficiency of the health departments could not be distinguished by the form of organization under which they worked. It is not the car, whether Marmon or Ford, in which one rides that counts, but the distance covered and the economy of operation.

Comparative mortality rates cannot be used as a basis of standardization because health departments cannot be held responsible for differences in mortality rates existing in different cities, for the reason that mortality rates vary with factors clearly beyond the control of the health department, such factors as age distribution, race and industry.

What then remains out of which we may construct public health standards? What is the essence of public health work? What objects are aimed at, and to what extent are they reached? These items of service and results remain and out of them satisfactory professional standards can be constructed.

Step No. 1 in standard building very naturally will be a statement of the different classes of service. This will follow the usual classification of activities as at present followed in municipal health work. There are two main classes of such activities: (1) common activities, found generally in all cities, and (2) special activities carried on only in certain cities where special problems exist.

This usual classification of service may be expressed as Step No. 1 as follows:

STEP NO. 1

Common Activities

1. Communicable Disease Control
2. Venereal Disease Control
3. Tuberculosis Control
4. Maternity and Infant Welfare
5. Pre-School and School Service
6. Food Supervision
7. Nuisance Abatement
8. Milk Supervision
9. Vital Statistics Work
10. Laboratory Service
11. Water Supply
12. Sewage Disposal

Special Activities

1. Malaria
2. Plague
3. Goiter
4. Mental Hygiene
5. Industrial Hygiene

Step No. 2 will be to express in terms of group judgment the relative values of the common and special activities. This expression should not merely represent composite group judgment, but the composite group judgment of those health officials who have a general rather than a special health interest. This means that the expression of relative values or weights for the different classes of service involved in a rating schedule for municipalities should be assigned by city health officers rather than by officials concerned with special phases of public health work, as, for example, officials interested in tuberculosis control, or officials interested in venereal disease control, or officials interested in child welfare work, or officials interested in medical inspection of schools or interested exclusively in laboratory work, or others interested exclusively in milk control, etc. To illustrate, and only for illustration be it remembered, the following values or weights in terms of points per 1,000 of total value, or modifications, might be assigned by some thirty, forty, fifty or a hundred city health officers interested in constructing for their guidance and support standards of group judgment. This would be Step No. 2.

STEP NO 2

Common Activities

Communicable Disease Control	200
Venereal Disease Control	50
Tuberculosis Control	100
Maternity and Infant Welfare	200
Pre-School and School Service	150
Food Supervision	30
Nuisance Abatement	20
Milk Supervision	50
Vital Statistics Work	50
Laboratory Service	70
Water Supply	40
Sewage Disposal	40
	1,000

Special Activities

Malaria	100
Plague	200
Goiter	25
Mental Hygiene	50
Industrial Hygiene	50

Step No. 3 in the construction of standards will be to take each one of the important health problems or classes of service as above stated, and find for it those essential items of service on which a fair group judgment may be based for finding what part of the weight assigned the problem has been attained. It may be noted here that it will not be necessary to include under each one of these major classes of health activities *every* item of service involved, but only such a number of the more essential items of service as will justify group judgment.

To illustrate, it may be said that we are not attempting to construct a pair of scales that weigh in milligrams, or even ounces, but in pounds. Or take another illustration: The cotton buyer cuts the bagging or wrapping of a bale of cotton in three, four or five places and pulls out a handful of cotton from each cut, and on the quality of the three or four samples bases his judgment and fixes his price for all of the cotton in the bale. He does not cut the hoops, take off the bagging, pull the bale to pieces, and examine each handful. His object is to take

only a sufficient number of samples to indicate fairly accurately the general quality of the bale. So, in selecting certain items of service for each problem, we are not attempting to take all, but the more essential items, and in sufficient number to justify a rating of reasonable accuracy of the character of the work involved in the particular problem.

The same principle is followed in rating and classifying the mental work of students in colleges and universities. Students are not examined on a whole text book. They are examined once a month, once a quarter, sometimes once a year, and eight, ten or twelve questions out of ten thousand that might be asked are submitted as a test. However, the standards of service here set up for appraising the work of a health department are far more substantial and exact than either of the illustrations used. So much by way of illustration! Now, let us set up the items of service on which group judgment might be based.

STEP NO. 3

The items on which communicable disease control might be established might be expressed as follows:

Communicable Disease Control	200
1. Reporting	
2. Follow-up by nurse or medical officer	
3. Office routine records and studies	
4. Hospitalization	
5. Smallpox immunization	

Again, the items on which venereal disease work might be judged might stand as follows:

Venereal Disease	50
1. Reporting	
2. Clinic attendance	

The items on which milk supervision might be judged might stand as follows:

Milk Supervision	50
1. Pasteurization and certification	
2. Bacterial content	
3. Grading	

Of course, all the other problems could be broken into their constituent more essential items of service in the same way.*

* An example rating schedule can be secured from the American Public Health Association.

Step No. 4 will be to find the basis of service which is to be used in judging of work for every one of the items into which we have subdivided each public health problem. In the first place the standard of service should not be dictated by arbitrary opinion, but by the best of existing practices, that is, experience. To follow our line of illustrations, beginning with the items listed under communicable disease control, what shall be the basis of service for that activity?

Reporting could be adequately checked by finding the proportion of cases reported for certain important reportable diseases for each death recorded. It would not be necessary to take all reportable diseases, but only a sufficient number on which to base a fair judgment as to this activity or service. We could take, for example: typhoid fever, 10 cases per death; diphtheria, 15 cases per death; scarlet fever, 50 cases per death; measles, 100 cases per death; whooping cough, 25 cases per death.

Follow-up work through visits by nurses and medical inspectors could be given a standard of four visits per case reported and the assignment of credits or points on that standard given in proportion to its attainment.

Office routine could be checked up by requiring a sufficient amount of office procedure in the study and analysis of reported diseases as indicated by, say, (1) the keeping of spot maps for at least four diseases, (2) the keeping of chronological charts for at least four diseases, (3) the keeping of case cards for at least four diseases, and (4) following standard rules and regulations as adopted by the Committee of the American Public Health Association in matters of the quarantine of suspected contacts and the isolation of cases and carriers.

The item of hospitalization could be checked up by the percentage of the more important diseases which should be hospitalized as, for example, 40 per cent of typhoid fever, 25 per cent of diphtheria, 25 per cent of scarlet fever, 100 per cent of smallpox, 25 per cent of poliomyelitis,

and 25 per cent of cerebrospinal meningitis.

Immunization against smallpox could be checked by the per cent of the population vaccinated, say 3 per cent, which takes in the additions to the population by birth, and growth by immigration for the average city.

Immunization against diphtheria could be checked or graded on a basis of 2 per cent of the population immunized.

In evaluating the venereal disease work, the two items could be based upon the following standards: 100 cases reported per 10,000 population, 1,000 visits to the clinics or placed under private medical care per 10,000 population.

Milk control might be evaluated on only three items; for safety: certification and pasteurization to the extent of 100 per cent of the supply; for cleanliness: the bacterial content as indicated by not more than 10 per cent of the samples in excess of a given count, say 500,000 bacteria per c.c. With this item it would be necessary for the city to be able to show a certain number of bacteriological examinations of its milk supply per 10,000 population—say 150 examinations. The last item of service involving milk control is the principle of grading which calls for a legal requirement for dairies or distributors to so label the bottle that the consumer may discriminate between good and bad milk.

Step No. 4 set up for the three common activities selected as illustrations would stand as follows:

STEP NO. 4

Communicable Disease Control		200
1. REPORTING		
(a) Typhoid	Std. 10 cases per death	
(b) Diphtheria	Std. 15 cases per death	
(c) Scarlet fever	Std. 50 cases per death	
(d) Measles	Std. 100 cases per death	
(e) Whooping cough	Std. 25 cases per death	
2. FOLLOW-UP		
1. Number visits per case reported	Std. 4 visits	
3. OFFICE ROUTINE		
1. Chronological charts	Std. 4 diseases	
2. Spot maps	Std. 4 diseases	
3. Case cards	Std. 4 diseases	
4. Isolation	A.P.H.A. standard rules	
5. Quarantine	A.P.H.A. standard rules	
4. HOSPITALIZATION		
1. Typhoid	Std. 40 per cent cases	
2. Diphtheria	Std. 25 per cent cases	
3. Scarlet fever	Std. 25 per cent cases	
4. Smallpox	Std. 100 per cent cases	
5. Poliomyelitis	Std. 25 per cent cases	
6. Cerebrospinal meningitis	Std. 25 per cent cases	
5. SMALLPOX IMMUNIZATION		
1. Percentage population vaccinated: Std. 3 per cent		
6. DIPHTHERIA IMMUNIZATION		
1. Percentage population immunized: Std. 2 per cent		
Venereal Disease		50
1. Reporting: Std. 100 cases per death for 10,000 population		
2. Clinic attendance: Std. 1,000 visits to clinic for 10,000 population		
Milk Supervision		50
1. Pasteurization and certification: Std. 100 per cent of supply		
2. Bacterial content: Std. Not over 10 per cent of raw samples in excess 500,000 bacteria per c.c.		
3. Grading: Std. Bottles so labeled as to permit buyer to discriminate		

We have now arrived by a slow but careful process at the fifth and last step that might be followed in the construction of public health standards representing crystallized professional judgment: (1) Having set up classes of service; (2) having given relative weights to each class; (3) having selected the essential items of service to be used in evaluating a particular class of service, and (4) having established standards of service for each item, we may now break the relative weight assigned to the classified items into fractions of relative values or weights for each item. This would be Step No. 5.

In conclusion, it may be said that in proportion as health officers have considered this subject seriously, in that proportion do they believe in the practicability and immense possibilities of standardizing public health practices in terms of professional judgment. This will come, maybe not this year, maybe not in five years, but come it will. Every real need sooner or later commands its own solution.

STEP NO. 5

Communicable Disease Control		200
1. REPORTING		30
(a) Typhoid	Std. 10 cases per death	
(b) Diphtheria	Std. 15 cases per death	
(c) Scarlet fever	Std. 50 cases per death	
(d) Measles	Std. 100 cases per death	
(e) Whooping cough	Std. 25 cases per death	
2. FOLLOW-UP		50
1. Number visits per case reported	Std. 4 visits	
3. OFFICE ROUTINE		30
1. Chronological charts	Std. 4 diseases	
2. Spot maps	Std. 4 diseases	
3. Case cards	Std. 4 diseases	
4. Isolation	A.P.H.A. standard rules	
5. Quarantine	A.P.H.A. standard rules	
4. HOSPITALIZATION		50
1. Typhoid	Std. 40 per cent cases	
2. Diphtheria	Std. 25 per cent cases	
3. Scarlet fever	Std. 25 per cent cases	
4. Smallpox	Std. 100 per cent cases	
5. Poliomyelitis	Std. 25 per cent cases	
6. Cerebrospinal meningitis	Std. 25 per cent cases	
5. SMALLPOX IMMUNIZATION		15
1. Percentage population vaccinated: Std. 3 per cent		
6. DIPHTHERIA IMMUNIZATION		25
1. Percentage population immunized: Std. 2 per cent		
Venereal Disease		50
1. Reporting: Std. 100 cases per death for 10,000 population		10
2. Clinic attendance: Std. 1,000 visits to clinic per 10,000 population		40
Milk Supervision		50
1. Pasteurization and certification: Std. 100 per cent of supply		35
2. Bacterial content: Std. Not over 10 per cent of raw samples in excess 500,000 bacteria per c.c.		5
3. Grading. Std. Bottles so labeled as to permit buyer to discriminate		10

THE "ARTESIAN WELL" AS A POTENTIAL SOURCE OF DANGER

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THE FOLLOWING study was undertaken incidental to a general survey of Manila sanitation in an effort to determine the causative factors of the high incidence of typhoid fever and other water borne diseases prevalent in that city. The results of this sanitary and bacteriological survey are of such striking significance in pointing out the potential dangers of the so-called "artesian well" in the problem of water borne disease, that the authors hope that a paper on this subject will be of value to all communities depending upon a similar system of wells for obtaining their potable water.

We should like to call attention to the fact that of the forty-six wells included in this report only two of them were free flowing, or true artesian wells. All of the others were deep wells, from which the water was obtained by means of pumps of various designs, principally hand pumps.

Manila derives its water supply from three principal sources: (1) Surface. Metropolitan Water District. (2) The so-called artesian wells, and (3) Bottled waters from distillation plants.

There has been a growing tendency since the first installation of artesian wells in Manila in 1907 to regard this water as being of unquestionable purity. Water from this source is used to a large extent for drinking purposes, while water from the Metropolitan Water District, owing to lack of filtration and uncertain chlor-

Unsanitary artesian well in Pasay.

A most unsatisfactory type of base which collects and holds contamination around the casing of the well.

ination, has been used largely for other purposes. It is estimated that 175,000 gallons of water from the deep wells is consumed daily for drinking purposes by the residents of Manila.

Since the American occupation of the Philippines in 1898, the consumption of water per capita in the city of Manila has gradually increased until it now closely approximates the per capita consumption of cities of equal size in the United States. Manila has had under consideration for the past few years the installation of a surface water system which would supply the needs of the city for the next fifty years with an adequate supply of properly sedimented, filtered and chlorinated water. Lack of funds has prevented the realization of this project.

To relieve the ever-increasing demand for potable water the government has resorted to the drilling of deep wells. Again, the lack of funds has prevented the maintenance of the pumps, equipment and sanitary conditions of the surroundings of the wells.

The water is brought from the various wells throughout the city to the homes of the consumer by water carriers who are supposed to be licensed. Some of the larger companies own their wells, while other companies and individuals simply transport the water from public wells to the consumer. The water is pumped from the wells into gasoline cans and demijohns and is then delivered by trucks and push carts.

One of the authors, in a report of a committee appointed by the director of health in 1922 to study the causative factors of the typhoid epidemic in the city of Manila, makes the following statement:

"We believe that great danger exists in the use of artesian water because of the manner in which it is collected and delivered. The following observations were made in this connection:

1. The receptacles used are improperly cleaned.
2. During the filling of the receptacles the water is often allowed to flow over the hands of the carrier into the receptacle.
3. The receptacles, after filling, are in many instances improperly protected from contamination from outside sources.

"The M—— and B—— Water Company delivers about 500 demijohns of water daily in the city of Manila. Their water is obtained from a well at the Germinal Cigar Fac-

Casing from artesian well showing point of leakage. Damage possibly due to galvanic action of current leaking from electric car line.

tory. The persons seen collecting the water had no health certificates, which are supposedly required. They did not cleanse the demijohns properly and the corks were not cleaned.

"At one of the public wells samples were taken directly from the well, and from the cans and demijohns and carriers immediately after filling. The following results were obtained:

Water directly from the well . . . . . 270 col. per c.c.

Water from water carrier's containers:

No. 22 . . . . 60,000 col. per c.c.
No. 23 . . . . 7,000 col. per c.c.
No. 24 . . . . Innumerable
No. 25 . . . . 60,000 col. per c.c.
No. 26 . . . . 90,000 col. per c.c.

"Definite evidence of colon bacillus contamination was found in samples numbers 24 and 26. The original well water showed no such evidence."

Wagon bringing water from a contaminated well in San Pedro Makati. Bacterial count on water direct from artesian well 75 per c.c. and presumptive test positive. Samples from wagon gave a count of 35,000 and positive presumptive test.

In 1923, samples of water were examined from the containers of seventeen water carriers, and the results compared with the results of the examinations of the water directly from the wells from which these carriers derived their water. In every case the bacterial count exceeded the count of the bacteria in the same water direct from the wells. In some cases the increase in the bacterial count was enormous. Bacilli of the colon-typhoid group were recovered from seven of the containers which had been filled with water, giving a negative presumptive test.

It is evident from the results of Table I that the water carrier offers a sanitary problem of no little significance. The defects of the demijohn system have long been recognized, as has the fact that contaminated water has been sold to the consumer ever since the inauguration of the demijohn system. The present study was undertaken with the object of determining the degree of contamination of the so-called artesian water as it comes from the well and the source of such contamination.

METHODS

The examination of the water from the forty-six wells supplying water to the city of Manila has been carried on over a period of ten months. Thirty-five of the wells are located within the city limits and eleven in the suburbs. The water from each of the forty-six wells was examined bacteriologically on five different occasions. The standard methods of the American Public Health Association were used as a basis for all bacteriological work. Qualitative and quantitative examinations were made. Presumptive, confirmed and completed tests were made on every sample, and an attempt was made to classify the strains

Defective pump, San Juan del Monte.

of bacteria isolated from the water samples. It is interesting to note the large number of aerogenes strains isolated from the well water.

In order to check the results of the bacteriological examinations a sanitary survey was made of each well and a dye test employed to determine the possible sources of contamination. Basic fuchsin and fluorescein in concentrated solution (30 gms. to 1,000 c.c.) were employed as a dye test. These concentrated solutions were applied to the outer surface of the casings of the wells and to the surface surrounding the pumps. The surface of the ground surrounding the pump was then flushed with water and the pump operated at regular intervals for several hours, or until the dye appeared in the water from the pump. In some cases the dye was returned in two minutes, while in the case of other wells the dye was not returned until a period of three to twelve hours had elapsed.

TABLE I

Well No.	Water from Bact. per c.c.	Presumptive Test	Container— Count per c.c.	Presump- Test	Con- firmed	Com- pleted
183	70	Negative	200	Neg.	Neg.	Neg.
185	41	Negative	3,000	Pos.	Pos.	Pos.
288	3	Negative	700	Pos.	Neg.	Neg.
229	3	Negative	800	Neg.		
193	12	Negative	1,300	Neg.		
196	7	Negative	6,000	Neg.		
200	120	Negative	6,400	Neg.		
202	232	Positive	21,600	Pos.	Neg.	Neg.
204	200	Negative	250	Neg.		
207	2,700	Positive	3,700	Pos.	Pos.	Pos.
208	125	Negative	55,800	Pos.	Pos.	Pos.
212	4	Negative	2,000	Neg.		
214	3	Negative	3,000	Pos.	Neg.	Neg.
217	41	Negative	5,300	Pos.	Pos.	Pos.
219	180	Negative	550	Neg.		
225	50	Negative	650	Neg.(?)	Neg.	Neg.
245	Count lost	Negative	Count lost	Pos.	Pos.	Pos.

Table II gives a complete list of the wells examined. It should give the reader a good general idea of the character of the water which is being peddled as "pure artesian water" in the city of Manila.

TABLE II

Survey of Artesian Wells in Manila	
1—Cold Storage Plant	+
2—Bureau of Science	+
3—Philippine General Hospital	++
4—San Andres Market	0
5—Sternberg Hospital	0
6—Germinal Cigar Factory*	++
7—Manila Hotel	0
8—Muralla	+++
9—Del Pan†	++
10—Humilidad	++
11—O'Donnell	++
12—Plaza Miranda	+++
13—Andalucia	+++
14—Bustillos†	+++
15—Maria Clara	++
16—Theresa	+++
17—Plaza Guipit	+++
18—Balic Balic	0
19—Sanitary Steam Laundry	0
20—La Rosario	0
21—Dagupin No. 1	++
22—Dagupin No. 2	++
23—Blumentritt	++
24—San Lazaro Hospital	++
25—Estado†	++
26—Antonio Rivera†	0
27—Moriones	++
28—Dart†	++
29—Herbosa	++
30—Engineer Island	+
31—Juan Luna	++
32—Watson Water Company	0
33—Anak ng Bayan†	+++
34—Plazuela	+++
35—Calle Jesus { Dye test	+
35—Calle Jesus { Bacteriological	0

Survey of Wells Outside of Manila	
1—San Pedro Makati—P. B. Roxas†	+++
2—San Pedro Makati—B. Roxas	++
3—Pasay—Dominga†	+++
4—Pasay—Leveriza	+++
5—Pasay—Aurora	+++
6—San Juan del Monte—P. B.	+++
7—San Juan del Monte—Market	+++
8—San Juan del Monte—Sta. Lucia	+++
9—San Juan del Monte—San Pedro	+++
10—San Juan del Monte—Block No. 11	+++
11—San Juan del Monte—Blumentritt	+++

0 Low bacterial count. Negative for bacilli of the typhoid-colon group.
+ High bacterial count. Negative for bacilli of the typhoid-colon group.
++ Bacilli of the typhoid-colon group present. Dye test negative. The contamination in many cases was found to be due to priming of the pumps with contaminated water.
+++ Bacilli of the typhoid-colon group present. Dye test positive.

* Water from tank.
† Priming well.

SUMMARY AND CONCLUSIONS

The results of our examination of forty-six of the wells supplying water to Manila show that only 26 per cent are furnishing a potable water of good quality. Three of the negative wells, however, show a high bacterial count. There is a strong possibility of the water from this small percentage of clean wells being contaminated by handling before reaching the consumer.

Of the wells examined, 45.6 per cent gave a positive dye test for leaky casings. Due to defective pumps, or to the low level of the water in the casings, it was necessary in the case of ten of the wells to prime the pumps. Water for priming in many instances was obtained from near-by esterros, or ditches. Eight of the ten priming wells gave a positive presumptive test. Positive bacteriological tests were obtained from 71.7 per cent of the forty-six wells examined in this series.

The equipment of an artesian well requires a considerable amount of supervision and repair, and the proper upkeep is necessarily expensive. In the case of the wells reported in this series the maintenance has been neglected owing to a lack of funds.

The contamination of well water in Manila is due to three principal factors: (1) unsanitary handling by water carriers; (2) defective casings and pumps allowing leakage of surface water into the well, and (3) priming of pumps with contaminated water.

THE OUTLOOK FOR INTERNATIONAL VITAL STATISTICS

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COMPARABLE vital statistics for all nations, and a world-wide exchange of current information on the prevalence of disease—these are goals long dreamed of by sanitarians whose visions went beyond their national boundaries. With the rapid development of transportation and communication between practically all countries, they are no longer academic ideals but have become necessities. They are as essential to a sound development of international coöperation for prevention of disease as vital statistics and disease notification are fundamental to local or national public health administration.

We are still a long way off from international vital statistics. No one, unless he has actually tried to use the statistics from different countries in a scientific manner, can realize how far we have to go. Compilations of mortality from various causes for different countries have been made, and are now being made, more frequently than before; for the most part, with a blitheness to be envied, but with an innocence to be deplored. Little account is taken of the extreme incomparability of the data, even when used for very rough and broad comparisons.

Many countries have adopted and a few use the International List of Causes of Death as a basis for classification of the causes of mortality; the use of the list, however, is no guarantee of the comparability of the statistics, and actually may mislead the uninitiated—assuming that there are those who are initiated—into improper use of the statistics. The fact is that the *data* themselves are not comparable and no degree of uniformity in *classification of* the data can cure this fundamental defect *in* the data.

This is a situation of so great importance that it is worth while to dwell upon it for a moment. To illustrate:

A preliminary examination of the statistical procedures in a number of countries shows that the number of physicians in proportion to the population, and thus the possibility for diagnosis of causes of death by medically qualified persons, varies widely. In England and Wales, the Netherlands, and Switzerland, for example, practically all causes of death are certified by medical men; whereas, in Denmark the proportion is 86.5, Norway 92.7, Saxony 74.8, and Hungary 56.5, according to the latest information available. In some other countries the percentages are far less. For example, in France the cause of death when stated is certified by an official physician who does not regularly receive information from the attending physician.

The great variety in practices designed to "protect" the professional secrecy of the physician results in serious incomparability in statistics of causes of death. To cite France again as an illustration, the legal record of a death, the "acte de decés," contains no reference to the cause—thus conforming to an article of the penal code which forbids the physician from divulging confidential information received in a professional capacity—and while it is the practice in most of the larger French cities for the *official* physicians to state a cause, it is evident that the French statistics of causes of mortality can be used only with a full understanding of such conditions as the one mentioned. In Switzerland, on the other hand, a statement of the cause of every death is certified by the attending physician in such a way as to prevent any

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revelation of the diagnosis except for purely statistical purposes; the physician is not only "protected" but he is unhampered in stating the diagnosis to the best of his knowledge. Between these two extremes there are all degrees and kinds of variations in procedure that affect the completeness and the accuracy of the data.

Again, countries differ with respect to administrative methods and details, and the effects of these differences are extremely important from the point of view of comparable statistics. In one, we find the central statistical bureau making every effort to obtain the coöperation of physicians in improving the accuracy of diagnostic statements and in checking up doubtful diagnoses; in another, no effort is made whatsoever, or the administration machinery is of a kind that such an effort is impossible; in still another, the administrative regulations vary according to local, provincial, or state governments. The very content of the death certificate and the form of the questions asked of the physician differ so greatly that the statements recorded inevitably must be incomparable. In the Netherlands, for instance, only a single cause of death is demanded. In some countries the "primary" disease causing death is asked for; in others, the "immediate"; in others the "principal." The confusion as to questions designed to record complications or contributory causes is equally as great.

There is another set of conditions which results in further incomparability of the statistics. These are differences in the procedure in tabulation and classification. The International List is by no means universally employed, but even where it is used it is *applied* differently. A few examples will make this clear.

In Belgium, the classification and tabulation of the cause of death (the short list of thirty-eight causes being used) are done in the local communes, the only function of the central statistical office at Brussels being to consolidate the tables. Here the important statistical procedure of classification is performed by local civil authorities untrained and uninstructed—except by a uniform table form—in this delicate task. Contrast this practice with that of the Netherlands, next door, where all of the original data of every death are transmitted to the central statistical office at The Hague, for the entire process of classification and tabulation where the complete International List of causes is used by trained personnel.

Let us take a major cause of death, the inflammatory diseases of the respiratory system which are divided in the International List into bronchitis (acute, chronic, etc.), broncho-pneumonia, pneumonia (lobar, etc.). If the number of deaths from pneumonia in each country be taken as 100, we find the corresponding number of deaths from the other two diseases in several countries to be as follows:

	Pneumonia	*Bronchitis*	*Broncho-pneumonia*
United States..	100	16	66
England and Wales	100	206	102
Norway	100	64	36
The Netherlands	100	49	122
Belgium.	100	77	97
Italy.	100	123	112
Japan	100	103	64
Hungary	100	49	443

Now there may be and doubtless are some actual differences, but it is hardly possible that all of the above variations are real. At any rate, it is impossible even to estimate the real differences for the reason that there is no agreement on the *definitions*. The countries have a classification without adequate agreement as to how to use it.

Let us take two minor causes of death which, however, are of great interest because of their etiological relationship, appendicitis and peritonitis. If the number of deaths from appendicitis in each of the following countries is taken as 100, the proportionate number of deaths from peritonitis (non-puerperal) is for the

United States 14, England and Wales 17, The Netherlands 225 and Italy 683. Much peritonitis, of course, is due to appendicitis; but these enormous differences in the ratios obviously are impossible. Nor do they suggest that the Dutch and Italian surgeons are more careless than their American and English colleagues. The differences are due chiefly to a difference in statistical procedure, peritonitis not being accepted generally as a final cause of death in England and the United States, while the contrary is the case in Italy and Holland.

The lack of uniformity in the treatment of joint causes and contributory causes of death is unbelievably great. Yet it is not to be wondered at because, in the first place, the general rules set forth in the International List are not only vague or inadequate but are recognized as doubtful in value in some instances, and, in the second place, they are not followed. Dr. T. H. C. Stevenson, of England, recently pointed out that in the United States in 1917, 14,842 deaths from cerebral hemorrhage out of a total of 62,417, so classed in primary tabulation, were complicated by arterial disease as a contributory cause; according to English statistical practice these deaths would have been classed as due to arterial disease, cerebral hemorrhage being regarded as a consequence.

A striking example is afforded in the influenza statistics for 1918. If the number of deaths classified as directly due to influenza is taken as 100 for each of the countries named below, the relative number of deaths from pneumonia (including broncho-pneumonia) were:

The Netherlands	98
United States	95
Germany	84
Norway	76
Italy	65
England and Wales	53
Denmark	35
Sweden	30
Spain	13

Finally, assuming that the data for any cause or group of causes, or for all causes, of death are comparable for several countries, the statistician is seriously hampered in placing them on a uniform basis. The age groups for which mortality statistics are available in countries which attempt to use the International List are hopelessly diversified. The diagram illustrates this diversity.

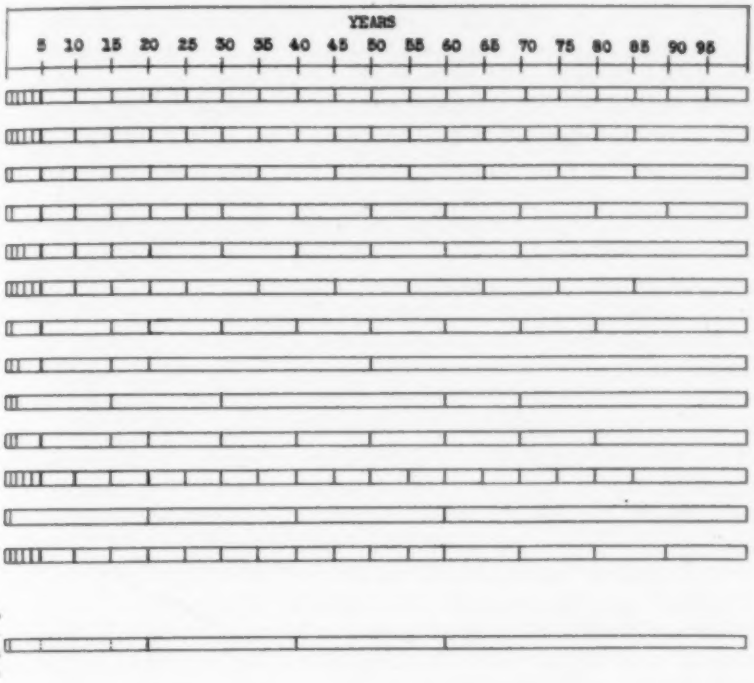
Furthermore, the last four groups in the age grouping recommended by the last conference on the International List of Causes of Death are so broad that they are useless for almost any purpose, and should never have been suggested even as a beginning. Although some suggestions have been made—that of Knibbs being, in the author's opinion, in the right direction—for a "standard population" for the adjustment of rates, no standard is as yet generally recognized.

The variety in practices relating to the treatment of nonresident deaths, in making inquiries as to the ill-defined or improperly stated causes of death, etc., the differences in the organization and administration of vital statistics which result in widely varying practices, in different degrees of accuracy of certification, classification, and tabulation, the differences in the details of the published statistical tables, especially from the point of view of sex and age groups, urban and rural divisions, etc., could be described in almost endless detail; but the foregoing illustrations will be sufficient not only to emphasize the necessity for caution in using statistics for different countries but also to serve as a basis for a consideration of the situation.

With all this diversity in procedures, one may well ask whether there is any possibility of attaining that degree of uniformity among nations which will render their statistics of causes of death and other vital statistics comparable.

There is an affirmative answer to this question, and it rests, it seems to me, in a fundamental sense upon two things:

DIVERSITY OF AGE GROUPINGS USED IN MORTALITY STATISTICS OF VARIOUS COUNTRIES



The first is the recognition of a real need—not merely an academic desire—for comparable statistics. This recognition is gradually coming about as the result of a number of international health movements and organizations and of the broadening interest in epidemiology. It was foreseen by Farr and d'Espine, to whom the first inception of an international classification of the causes of mortality must be credited; encouraged by the International Statistical Congress (now the International Institute of Statistics); and brought to the point of actual agreement by Bertillon, and in the three decennial international conferences that have taken place. The broader international cooperation in public health fostered by and through the Office internationale d'Hygiene publique, by the League of Red Cross Societies and the International Red Cross, the Pan-American Sanitary Conference, the International Health Board of the Rockefeller Foundation, and finally by the International Health Organization of the League of Nations, is creating a demand—to use the political economist's phrase—for a common language in which the health of the world can be described and studied.

The second is the provision for some sort of an international agency through which the epidemiologists and medical statisticians in the different countries can associate themselves in the analysis of the problems involved and in constructive studies looking toward practicable solutions. Without discussing the merits or demerits of the various efforts that have been made in this direction, the latest and most comprehensive agency for this purpose which has been set up is the Service of Epidemiological Intelligence and Public Health Statistics, inaugurated early in 1923 by the International Health Organization of the League of Nations. It may be stated that this agency in no way conflicts with any other agency interested in

the problem, since the Office internationale d'Hygiene publique (of which the United States is a member) has become the advisory council of the League of Nations' Health Organization; the statistical division of the League of Red Cross Societies was turned over to the League of Nations, and a cordial relationship has been established with the International Institute of Statistics. The last-named organization, as is well known, is a self-perpetuating body of 200 distinguished statisticians from all branches of statistics and from every important country in the world; its technical and professional assistance may be counted upon in such a movement as this. The League of Nations' Service of Public Health Statistics is interested, of course, primarily from the viewpoint of public health, and is actually a part of the Health Section of the League of Nations of which Dr. Ludwig Rajchman is the Medical Director, and the Health Committee of the League's International Health Organization the supervising body. As a fact of particular interest to Americans, it may be recalled that a considerable proportion of the initial work of the Service is being financed by the International Health Board of the Rockefeller Foundation.

The provision for and the establishment of such an international agency for statistical purposes in the field of public health is without precedent. As the name suggests, its work is along two lines: (1) current epidemiological information, and (2) statistics of public health, particularly vital statistics. In the latter field, one of its principal activities relates to the comparability of the statistics of the different countries. The statement of the Service's general policy in the first report of its chief is possibly not without interest. It was proposed that the new Service should in no sense of the word set itself up as a "super-statistical" office, but rather as an agency for the coöperation of the vital statisticians and health departments in the various countries. It was indicated that its work in "medical," or vital, statistics should not be looked upon as an attempt for "reform" but rather as affording an opportunity for development.

The first step in the Service's efforts was the preparation of a series of preliminary reports on the vital statistics of a number of countries, the reports being prepared by statisticians, or others selected in the countries covered, in order to obtain hitherto unavailable information on the scope and details of the population census, the registration of population, births, deaths, the certification of causes of death, the notification of disease, the procedure in the classification and tabulation of the data, and the statistical tables. The second step was the initiation of a series of more comprehensive monographs on the official vital statistics in each country which would not only catalogue the statistics but describe the character of the data and the statistical procedure in detail, so that statisticians and health officers in other countries could be informed as to the shortcomings as well as the advantages of the statistics. This important work was intrusted to the distinguished English medical statistician, Dr. Major Greenwood. Two monographs already have been published, in English and French, on The Netherlands and Belgium, and similar monographs on the vital statistics of England and Wales, Italy, and Spain are well under way. Within a few years a small library of monographs, it is hoped, will be available.

But, upon the basis of the information available from the preliminary reports, as well as from studies made by the staff of the Service at Geneva, it was felt that the third step should not be longer postponed, namely, the inauguration of a cooperative effort to study the incomparability of international vital statistics and the causes thereof, with the specific aim of suggesting definite recommendations for uniformity on *specific* procedures. In the second report of the chief of the Service, therefore, the following statement and proposal appeared which later

were approved by the International Health Committee:

"It was doubtless fully realized by those who participated in drawing up and in revising the International List of the Causes of Death that they were attacking only one phase of the problem of comparability of mortality statistics, and it has been increasingly evident to those who have given the subject careful study that a uniform standard for classifying the available facts cannot in itself remedy such fundamental defects as may exist in the uniformity and comparability of the facts themselves. Even though every country or a group of countries should utilize the same method of classifying and grouping causes of death, the comparability of the data so classified is still open to question. I wish to put forward as a fundamental proposition that, before any real progress towards comparability of mortality statistics can be attained, a careful study must be made of the mortality facts as recorded in each country, the procedure by which they are classified, compiled and presented in the official statistics, and of the various factors and conditions which are responsible for the differences in their meaning. It seems to me that we have reached a stage when this necessity must be fully recognized, and that, regardless of the difficulties which may present themselves, the task must be faced and boldly attacked in an organized and systematic manner."

The recommendation was as follows:

"That special committees of technical statisticians be appointed to advise and collaborate in the study of the following subjects:

"(1) On statements of the causes of death in the different countries, and on the procedure in classification of deaths in the different countries;

"(2) On uniformity in statistical presentation of mortality, with special reference to the sex and age groups in tables of mortality from all causes, as well as for specific causes;

"(3) On the definition of still-births;

"(4) On a standard population for use in the standardization of mortality rates;

"(5) On notification of disease for statistical purposes and morbidity statistics."

"A preliminary report would be presented to each of the special committees containing such information as is now at hand, together with an outline for a further collection of material and for its study and final presentation. When any committee feels that it would be ready to make recommendations of a definite kind, either of a preliminary or final character, on certain points, it would consider the material it had compiled and analyzed and draw up its suggestions, which would be placed before the Health Committee for further action."

The first four of the committees have been named and are beginning their work. In their membership appear the names of Dr. William H. Davis, chief statistician for vital statistics in the Bureau of the Census, Professor Raymond Pearl, of Johns Hopkins University, and Professor E. B. Wilson of Harvard University. Each of the committees will be assisted by the staff at Geneva, by technical secretaries, and from time to time will have the opportunity for meetings, studies, and necessary researches.

A further and subsidiary, but not unimportant, step was the institution of "collective studies" of certain vital statistical problems. In the autumn of 1923, by means of an additional grant from the Rockefeller Foundation, a group of nine official statisticians and epidemiologists from as many different countries (Brazil, Russia, Italy, Norway, Czechoslovakia, Poland, Bulgaria, Jugoslavia, and Hungary) were convened at Geneva for seven weeks for a study of the statistics and the statistical procedure in various countries and later made visits to the statistical bureaus in Switzerland, France, Holland, and England. Three other groups composed of officials responsible in their respective countries for vital statistics, will be convened in the autumn of 1924. From time to time individual statisticians from various countries are invited to Geneva, either singly or in small groups, to consider special points or advise on broad questions of policy and action.

It is too early to judge of the possible success of this new agency in the field of international vital statistics. It is an integral part of an international health or-

ganization and it is better equipped with funds for its initial years, at least, than any agency heretofore in the field. It has laid out a policy and plan of work on lines which, in the author's opinion, are conservative and sane. But since its work must be done in the last analysis by the demographic and medical statisticians and the statistical offices in the different countries, its success must rest upon the degree in which coöperation and agreement can be secured, and given.

With the necessity for comparable international vital statistics more clearly recognized, and with an international agency definitely provided and at work, the next problems will be very practical ones. Among them undoubtedly will be such questions as this: How can uniformity *actually* be secured among all nations on matters that involve wide differences in legislation, health organization and practice, and statistical procedure? It is one thing to propose, but it is another to obtain agreement.

I am stating my own opinion only, but it seems to me that once it is fully realized that *any* step necessarily must be gradual, the way is open in certain directions and can be followed in a manner already tried and found successful.

In the first place, the lack of uniformity in vital statistics in different states and countries may be ascribed to three general groups of conditions:

(1) Those which are more or less inherent in the state of development of public health and statistical services, the supply of medical practitioners and their attitude, and conditions of even a physical or topographical nature;

(2) Those which are involved in the laws and in the administrative structure of the governments;

(3) Those which are determined by purely statistical practice and procedure and for which the public health and statistical administrations are responsible.

Changes demanded by uniformity in either of the first two groups of conditions can come only very gradually and can be influenced only to a slight degree at any given time by the force of international opinion among health officials and statisticians. But a large proportion of the obstacles to comparable vital statistics lie in the third group, and it is here that real progress is possible.

In the second place, agreement upon a proposed procedure does not necessarily involve actual carrying into effect by all participants, and under the circumstances should not postulate action of this sort. The International List of Causes of Death, for example, was agreed to as a standard by the representatives of a large number of nations; but it is being adopted only as the nations find themselves in a position to put it into practice.

In the third place, the suggestion is worth careful consideration that the principle underlying the mortality registration area, such as we have in the United States, may be a practicable one for nations. There is a group of nations, not composed of the large ones only, which are already in a position to make their statistics comparable in certain important respects, and, by agreement among all participants, an initial "area" can in the not too far distant future be set up, for which the vital statistics may be comparable in these respects, and into which other countries can come gradually. For most of European countries and other countries where the European system of registration prevails, it is not so much a question of complete registration of births and deaths as it is of the statement, classification, and presentation of causes of death.

ACKNOWLEDGMENT

The author desires to make grateful acknowledgment to his colleagues on the staff of the League of Nations' Health Section for much of the material and suggestions referred to in the foregoing pages.

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A SURVEY OF TWO HUNDRED AND ONE PRIVIES FOR INTESTINAL PARASITES*

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NUMEROUS LAWS and ordinances have been enacted and campaigns carried on throughout many of the southern states by the state, county and local public health agencies, with the object of erecting sanitary privies and maintaining them through periodic inspection. In addition, adequate sewage and excreta disposal methods have been adopted in many cities. All of these measures were advisable from the standpoint of preventive medicine, because they aimed at keeping down the possibility of the spread of bacterial and helminthic agents of disease, and thus prevent epidemics of one kind or another brought about by the dissemination of the etiological agents very often present in the feces.

At the time these measures were adopted nothing was known regarding the presence of protozoa in the excreta, especially *Endamoeba histolytica*, which causes amoebic dysentery in man. It seemed advisable to investigate this phase of the subject, and accordingly a survey was made for *Endamoeba histolytica* and other intestinal parasites in two hundred and one privies in a southern city. Most of the privies belonged to negro families. There were four types of toilets represented in the survey—concrete vault, can, surface and L.R.S. The last type predominated.

The surface and can privies were often in need of repair, as lids to the seats were lacking in many of them, thus permitting flies to reach the excreta. The condition at the back and sides of the individual privies with respect to access to the excreta by flies was not noted; but it is to be taken for granted that a fair number of them were faulty in this respect too.

The fecal samples, one from each privy, were sent in bottles containing 10 per cent formalin to the Hygienic Laboratory, Washington, D. C., for examination. The results of these examinations are given in Table I.

The percentage of privies showing cysts of the intestinal protozoa was about the same for all types of privies, a few exceptions occurring for certain species of cysts. The largest percentage of *Enda. coli* infections was found in the L. R. S. type of privy, of *Endol. nana* in the surface type, of *Ioda. williamsi* and *C. mesnili* in the surface type and of *G. lamblia* in the L.R.S. type. Of the total number of times each protozoon was found in all of the four types of privies, we find that almost 5 per cent (4.9 per cent) were those of *Enda. histolytica*, 6.5 per cent *Ioda. williamsi*, 8.9 per cent *Enda. coli*, 15.4 per cent *Endol. nana*, 0.5 per cent *C. masnili* and 10.8 per cent *G. lamblia*.

It is not surprising to find a high index of worm infections also present in the samples. By far the largest number of infections were those of *Ascaris* and *Trichuris*, excepting of course those of the free-living coprophile nematode *Diplogaster*, and the number of unidentified thin-shelled nematode ova, most of which probably belonged to *Diplogaster*, but some of which might have been hookworm ova. In the L.R.S. type of privy, forty samples showed *Diplogaster*, and

*This survey was completed in 1922, while the author as Assistant Zoologist in the U. S. Public Health Service was supervising the protozoan survey of 8,029 persons for the detection of *Endamoeba histolytica*, the entire project being under the direction of Professor Ch. W. Stiles of the Hygienic Laboratory, U. S. Public Health Service. The results were not included in the report of that survey (Boeck, W. C., and Stiles, Ch. W., Hygienic Laboratory Bulletin No. 133). The data were thought valuable from the standpoint of public health and preventive medicine and were therefore made ready for publication. I am very grateful to Dr. Ch. W. Stiles for his counsel and for his part in making this survey possible.

TABLE I

CASES OF INFECTION

Type of Privy	Total No. Privies Examined	Intestinal Protozoa						Cestode	Nematode			
		Enda. coli	Endol. nana	Enda. histolytica	Iodamoeba	Chilomastix	Giardia	Taenia	Unidentified ova	Ascaris	Trichuris	Diplogaster
Concrete vault	6	..	2	1	1	..	..	..	..	1	1	1
Commercial can	62	5	6	3	3	..	7	1	3	3	4	5
Surface	43	4	10	2	7	1	4	..	4	2	1	6
L. R. S.	90	9	13	4	2	..	11	..	30	1	..	40
Total	201	18	31	10	13	1	22	1	37	7	6	52

PERCENTAGES OF INFECTION

Concrete vault	6	..	33.3	16.7	16.7	..	..	..	..	16.7	16.7	16.7
Commercial can	62	8.0	9.7	4.8	4.8	..	11.3	1.6	4.8	4.8	6.5	8.1
Surface	43	9.3	23.3	4.7	16.3	2.3	9.3	..	9.3	4.7	2.3	13.9
L. R. S.	90	10.0	14.4	4.4	2.2	..	12.2	..	3.3	1.1	..	4.4
Total	201	8.9	15.4	4.9	6.5	0.5	10.8	0.5	18.4	3.5	2.9	25.9

in many of them ova were present; thirty samples showed only thin-shelled nematode ova. The thin-shelled nematode ova were not identified, but it seems probable that most of them were ova of *Diplogaster*, since this worm was so often present in samples taken from the L.R.S. type of privy, due to the fact that the excreta are allowed to remain for a longer time in these privies than in the can privies especially, thus providing a suitable environment for the nematode—even more so than the other types of privies in which *Diplogaster* was encountered to a lesser extent (see Table I).

These results are difficult of interpretation if an expression of the probable incidence of infection is desired for the people living in the city from whence the fecal samples were received. The task is difficult because the number of persons who used the privies was not ascertained, and it was probable that many of the fecal specimens examined represented a composite sample from one person or several.

But the significant result of this survey was that one out of every twenty privies was a source from which *Enda. histolytica* cysts were obtainable for dissemination. Such conditions as these help to explain the larger number of cases of amoebic dysentery in the southern states compared to the northern states (in the latter of which exist more efficient methods of excreta disposal in general), and at the same time make a strong plea for the efficient storage of human excreta after defecation and prior to efficient disposal, to prevent the access of flies. As Wenyon and O'Connor[1] stated, it is very probable that these insects may play a significant part in the dissemination of protozoan infections. In this connection, Root[2] has proved that the cysts of *Enda. histolytica* may remain apparently viable in the fly's intestine as long as 49 hours after their ingestion.

There is increasing evidence that the wild rat may become infected by eating feces containing the cysts of *Enda. histolytica*. It is claimed that in this animal the disease does not always develop into acute dysentery and marked ulcerative colitis, but may take on a chronic form with little or no symptomatology. The rat thus becomes a "carrier" in every sense, and passes cysts of the amoebae in the feces. This evidence has been the result of the work of Lynch[3], Brug[4] and Kessel[5]. Here, then, is perhaps another agent of dissemination of *Enda. histolytica* infections, and a dangerous one.

In view of the fact that *Enda. histolytica* cysts were so prevalent and because they may be transported unaffected by flies that feed upon infected feces or by

"carrier" rats, there is an additional reason for maintaining rigid supervision of privies with the idea of making them sanitary and fly-proof and providing for the institution of proper and efficient methods of excreta disposal.

When, as it happens in some sections, the ground water is only 3 or 4 feet from the surface, and after heavy rains it may reach the surface, causing an overflow of the excreta from the privies and contaminating the well water (many wells only utilize the ground water for drinking purposes), or scattering excreta in the area about the privy, it is not surprising to learn of numerous gastro-intestinal disorders among the inhabitants of these regions. The protozoan cysts live longer in water than when exposed to drying; so the rains add to the danger of dissemination, and are in no way detrimental to the protozoa. In such sections measures of adequate drainage, sewer systems, water works, and more rigid sanitary inspection are needed. Such a danger as this in one area of a city is also a direct menace to other and even better sanitated sections. Flies and rats and mechanical means of transmission or dissemination of infectious material exercise no choice, but as long as infectious agents are available, there is a potential danger to the entire city and not alone the poorly sanitated area.

SUMMARY

1. An examination of excreta from two hundred and one privies in a southern city revealed an incidence of infection with *Enda. histolytica* cysts of practically 5 per cent. The incidence of other protozoa and helminthic infections was sufficiently high that all together the situation was surprising if not somewhat alarming.

2. This infectious material constitutes a potential danger to the community and accounts for the greater prevalence of amoebic dysentery and helminthic infections among peoples of the South compared to those of the North where in general more adequate methods of excreta disposal are in force.

3. The situation furnishes an argument for continued rigid inspection of privies in the South and for the extension of proper measures of excreta disposal. Likewise, sewage systems, proper drainage and adequate and sanitary water supplies are necessary where the conditions can be ameliorated or destroyed by such public health measures.

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Five Hundred Dollars for a New Marine Hospital.—Old contribution may some day be used. In 1878 a grateful patient or friend of the Marine Hospital Service (now the Public Health Service) donated $523.50 "for the benefit of the Marine Hospital at Bath, Maine." The amount was placed at interest by the Collector of Customs, and is still on deposit, because there was no Marine Hospital at Bath, Maine, and never has been, the nearest ones on that coast being located at Portland, Maine, and Boston, Massachusetts.

Practically all cities in the United States are increasing in size, and the city of Bath is no exception to this rule. It is not at all improbable that the time may come when a new Marine Hospital will be needed on the Maine Coast to serve those who go down to the sea in ships, in conformity with the government policy established in 1798 to provide medical care for merchant seamen. Students of compound interest may compute the period necessary for the donation to grow to the necessary amount.

THE PREVALENCE AND CONTROL OF DISEASE

REPORT OF THE COMMITTEE ON COMMUNICABLE DISEASES

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State Health Officer, Madison, Wisconsin

Read before the Conference of State and Provincial Health Authorities of North America, Lansing, Michigan, June 17, 1924.

TO OBTAIN light upon some of the present-day problems presented by communicable and preventable diseases, the Committee, following the usual custom, sent a questionnaire to the state and provincial health authorities. Seven questions were asked relating to the prevalence and methods of control used in some of the more common diseases. It was hoped that the answers regarding control might provide some sort of standard by which we may be guided in policies where we are in doubt. Forty-four replies were received answering in whole or in part the questions or their subdivisions.

Question 1. (a) Your state board of health recommendations for use of toxin antitoxin and agencies for administration?

Answer. Practically all replies recognize the value of toxin antitoxin, which means its use is endorsed by all state and provincial health authorities. The replies do not indicate whether the procedure is limited to endorsement, or whether practical work has been organized, probably in the form of official recommendations. Apparently no standard rules which the various states and provinces have followed have been laid down along this line.

(b) Age of children where toxin antitoxin is recommended?

Answer. Out of forty-one replies there were twenty-three different answers; ten of these failed to state a minimum age limit although some of them may not have intentionally done so. We have been given to understand that under six months of age toxin antitoxin may fail to work up protective antitoxin in the nonimmune. Nine replies advocate that its administration begin at six months, seven at one year, three at two years, one at school age and one at seven years. The range of years in which it is administered is as follows:

Through pre-school age	4
Up to seven years	1
Up to ten years	9
Up to twelve years	2
Up to fourteen years	1
Up to fifteen years	2
Up to sixteen years	1
Up to eighteen years	1
School age	2
No final limit	2

In all probability some who have replied to the question have confused it with the question following:

Question 2. Recommendations for application of the Schick test and age limit under which toxin antitoxin should be administered without the Schick test?

Answer. Undoubtedly some replying have confused this question with the preceding one. There were thirty-five replies to this question. They are as follows:

Do not use Schick test at all	2
Use toxin antitoxin on all children	1
No recommendations	6
Under three years	1
Under five years	3
Under six years	8
Under ten years	2
Under ten years except large cities	1
Under twelve years of age	2
Six months and over	1
Six months to five years	1
Six months to six years	2
Six months to eight years	1
Six months to ten years	1
Six months to twelve years	1
Two to six years	1
Two to twelve years	1

The difficulty in obtaining correct readings of the Schick test on the part of physicians who occasionally administer it is apparent to those familiar with its use. Fallacy in reading gives false assurance that must ultimately help to discredit the Schick test. It adds one more injection to nonimmunes who are to receive toxin antitoxin. Apparently this is recognized by the replies received. The fact that the greater part of the deaths from diphtheria are in preschool age is ground for the early administration of toxin antitoxin by all the means in which we are able to accomplish it. Children's clinics, homes and hospitals for children, and family physicians provide avenues for reaching the small children, and it should be understood that they should be reached by propaganda.

Question 3. (a) Prevalence of communicable disease. Give in order of prevalence the incident of scarlet fever, diphtheria, typhoid fever and smallpox as compared to average incident of five years preceding 1923?

Answer. Scarlet fever, in 1923, was the most prevalent disease in twenty-one states and provinces replying to the questionnaire. In the five years preceding 1923 it ranked first in five states and provinces. As is commonly known, the northern tier of states and provinces is most subject to scarlet fever and the southern and gulf states the least. There is a marked difference between the north and the south.

Diphtheria, in 1923, was the most prevalent of the four diseases in ten states and provinces, and for the preceding five years in eleven states and provinces replying to the question.

Typhoid fever, in 1923, was the most prevalent disease in one state and in the preceding five years the most prevalent of the four diseases in four states. Its prevalence in some of the southern states is well known.

Smallpox, in 1923, was numerically first in no state or province replying. In the preceding five years it was the most prevalent of the four diseases in five states and one province.

The object of the above questions was to bring out evidence bearing on the decline of typhoid fever, on the prevalence of smallpox, and the possible effect of toxin antitoxin in diphtheria. While it is to be admitted that the changes of a single year are not much of a guide, it nevertheless offers signs of the manner in which we are trending. The intimation of the decline of typhoid fever in the south and of smallpox in the west, where it ranked first for two of these four diseases, bespeaks efforts accomplished in attention to the public health. The decline of diphtheria from first to second place in some eastern states may be at least in part an accomplishment of toxin antitoxin. A study of yearly morbidity and mortality tables would be necessary to prove that point.

(b) Is smallpox becoming more prevalent?

Answer. Out of forty-one replies, thirteen answered "yes" and twenty-eight answered "no."

(c) Is smallpox becoming more virulent?

Answer. Out of thirty-nine replies, twelve answered "yes" and twenty-seven answered "no." Nothing has been indicated by the above questions. Regional changes in prevalence and character account for the above replies. Increased virulence may occur in well vaccinated communities but the opportunity for great havoc is alone present in the poorly vaccinated states.

Question 4. (a) Regulations for protecting the public from chronic diphtheria carriers and regulations governing chronic diphtheria carriers?

Answer. Of the forty-two replies received the answers were as follows:

No regulations	12
Quarantine	4
Quarantine and negative and virulence tests	2
Quarantine and refer to state board after eight weeks	1
Modified quarantine	1
Culture or quarantine	1
Isolation	4
Isolation until negative	1
Isolation until two negatives	1
Isolation and carrier sign until negative swabs and virulence test	1
Negative test	1
Two negatives	2
Three negatives	1
Negative and virulence test after five weeks	1
Two negatives 48 hrs apart and virulence test	2
Exclusion of food handlers	1
Schick test	1
Successful culture and virulence test	1

(b) How long before an acute case of diphtheria is classed as a chronic carrier?

Answer. Thirty-two replies.

No rules	1
21 days	4
4 weeks	4
3 to 4 weeks	1
5 weeks	1
5 weeks after first terminal release culture	1
30 days	2
6 weeks	3
6 weeks after acute symptoms	1
After 6 weeks positive	1
After 3 positive swabs	1
After quarantine	1
Each case on its merits	1

Question 5. (a) Can some modified form of quarantine in diphtheria be advocated based on use of Schick test and toxin antitoxin?

Answer.

No	19
Yes	12
None known	1
Determined by study	1
Possibly	1
Not at present	1

(b) If so, what modification do you recommend?

Answer. The grounds on which quarantine can be modified by reason of the Schick test and toxin antitoxin were not explained by these replies. There is no mention of the fact that immunes may be virulent carriers. In looking for light, we fail to find it.

Question 6. (a) Do your regulations provide for terminal fumigation?

Answer. Thirty-nine replies received.

Yes	12
Optional	1
Some diseases	1
No, except smallpox	1

(b) Do your regulations provide for concurrent and terminal disinfection only?

Answer. There were thirty-one replies.

Yes	27
No	1
Advocate it	1
Concurrent	2

(c) Have you returned to fumigation after discarding it?

Answer. There were thirty-six replies, all of which reply "no." Once free from it, there is apparently no tendency to return.

Question 7. (a) Procedure advocated for prevention of goiter in children?

Answer. Forty-one replies received.

25 use iodine
15 use no iodine treatment.

(b) Preparation of iodine and method of administration advocated?

Answer.

Sodium iodide	1
Iodine	1
Tablets of casein iodide	1
Salt and chocolate wafers	1
Iodostarine	1

That goiter is prevalent in many states is evidence by the replies stating that they use iodine. No standard method is advocated on the means of prevention.

These answers are as varied as they could possibly be. If any of us is embarked upon a certain course of procedure, we can find backing for a similar procedure in some one state or province, for the whole range of possibilities seems to be covered. We take iodostarine in one state; move into the next and get iodized salt; we remove again and are fed sodium iodide, and on the fourth removal we get it in the city drinking water. Our children get the Schick test in one state and in the next we are told it is discarded and they must have antitoxin; in this place they fumigate and in that they disinfect without fumigation, and so on. It is true we are all aiming at the same end, and each sovereign state knows its way is best and as sovereign states we are going to do just as we feel like doing. It may be somewhat puzzling to the person who moves about; but doubtless we get results in our own peculiar ways. However, are we taking the slightest pains to remedy this varied condition? We recommend that the Conference establish a general policy of procedure for application of the Schick test and toxin-antitoxin. Also since it is conceded that the chronic diphtheria carrier is a marked factor in the transmission of diphtheria some uniform procedure for control should be outlined.

OFFENSIVE TASTES IN PUBLIC WATER SUPPLIES

REPORT OF THE COMMITTEE ON SANITARY ENGINEERING

CHARLES F. DALTON, M.D., *Chairman*
Secretary State Board of Health, Burlington, Vermont

Read before the Conference of State and Provincial Health Authorities of North America, Lansing, Michigan, June 16, 1924.

DURING the past few years the occurrence of offensive tastes in public water supplies has been noted with increasing frequency, particularly in those sections of the country where the manufacture of byproduct coke is an important industry. The water supplies thus affected are of surface origin, being obtained from streams, reservoirs and lakes, and in each case chlorination of the water supply has been practiced in its purification. This fact naturally led to the original belief that the tastes were caused by chlorine; but subsequent evidence has indicated that the tastes have been due to industrial wastes and that chlorine has not been the primary cause, though it has intensified the taste as a result of some reaction taking place between the chlorine and certain components of the industrial waste. The occurrence of these offensive tastes in public water supplies has introduced one of the most important problems of water supply which have arisen in recent years. The effect upon public water supplies is so widespread and of such vital importance as to warrant the recording of some of the more important facts.

Causes of Offensive Tastes: Various investigations have shown that the occurrence of these offensive tastes in public water supplies is caused principally by the discharge into streams and lakes of the waste waters produced in the operation of byproduct coke plants. The vapors and gases driven off from bituminous coal in the manufacture of coke contain valuable constituents which by proper processes may be recovered, leaving the gas for use as fuel. The principal byproducts are ammonium sulphate, tar, benzol, toluol, solvents and naphthalene. The processes of byproduct recovery utilize large volumes of water and the liquid wastes from these processes contain various compounds, the most important of which with reference to taste

production are phenol and other tar acids. It is these compounds which cause the offensive tastes in public water supplies when permitted to reach a stream and thence a public water supply.

When chlorine is used in the treatment of the public water supply, a reaction occurs with the formation of chlorophenol or other reaction product which is the taste-causing constituent. The taste has been variously described as medicinal, chemical or carbolic acid. Extremely small amounts of phenol are sufficient to produce offensive tastes. At Milwaukee it was found that tastes were produced in chlorinated water containing 1 part of phenol in 500,000,000 parts of water. Other investigations have shown that chlorinated water containing 1 part of phenol in 75,000,000 to 100,000,000 parts of water produces an offensive taste.

In addition to wastes from byproduct coke plants, other industrial wastes may be held accountable for these offensive tastes, such as the wastes from tar plants, wood distilling plants, artificial gas plants and gas producers. Complete investigations have not as yet been made to determine all causes but sufficient evidence has been produced to warrant the conclusion that the wastes from byproduct coke manufacture constitute the principal cause of the trouble.

Occurrence of Tastes in Public Water Supplies: In the Progress Report of the Committee on Industrial Wastes in Relation to Water Supply, American Water Works Association, May 1922, it is reported that fifty public water supplies in the states of Indiana, Illinois, New York, Ohio, Pennsylvania, West Virginia and Wisconsin have been affected by these offensive tastes. In a report to the Surgeon General, U. S. Public Health Service, by H. R. Crohurst, Sanitary Engineer, March 1924, presenting a summary of information relative to phenol waste producing plants on the Ohio River watershed and vicinity and the communities reporting tastes and odors in the public water supply, data are presented showing that twenty-five public water supplies in the Ohio River drainage area, and fourteen water supplies outside of the Ohio River drainage area, are affected by these offensive tastes. The same report gives data regarding the existence of nineteen byproduct coke plants in the Ohio River drainage area and ten byproduct coke plants outside of this drainage area. Among the more important municipalities, the public water supplies of which have been affected may be mentioned Morgantown, Williamstown and Huntington, West Virginia; McKeesport, New Castle, Beaver Falls and South Pittsburgh suburbs, Pennsylvania; Youngstown, Niles, East Liverpool, Steubenville, Portsmouth, Cincinnati, Cleveland, Lorain and Elyria, Ohio; Ashland and Louisville, Kentucky; Vincennes, Anderson, East Chicago, Hammond and Gary, Indiana; Waterloo, Elmira, Rochester, New York; and St. Paul, Minnesota.

Official Conferences: On May 18, 1923, a conference was held at Washington, D. C., called by the Surgeon General, U. S. Public Health Service, for the purpose of considering the extent of this problem. Representatives of eleven states attended, also representatives of the U. S. Public Health Service, U. S. Geological Survey and U. S. Bureau of Mines. At this conference the importance of the problem was established and a motion was passed requesting the U. S. Public Health Service to investigate the public health aspects of the problem and requesting the U. S. Bureau of Mines to investigate the industrial aspects.

On June 8, 1923, a conference was held at Cleveland, Ohio, called by the Ohio Department of Health. This conference was attended by representatives of each byproduct coke plant operating in the state of Ohio and by representatives of the State Department of Health and several municipalities. The manufacturers' representatives admitted the importance of the problem and expressed a willingness to provide proper disposal of wastes

so as to avoid damage to public water supplies.

On January 29, 1924, a second interstate conference was held at Washington, D. C. called by the Surgeon General, U. S. Public Health Service. This conference was attended by representatives of the state health departments of ten states, in addition to representatives of the U. S. Public Health Service. At this conference a permanent organization of the states affected by this problem was formed with the election of Dr. John E. Monger, State Health Commissioner of Ohio, as chairman, and E. S. Tisdale, Director Division of Sanitary Engineering, West Virginia Department of Health, as secretary. It was determined that a uniform policy should be adopted by the organization of the states to secure correction of the damage to public water supplies.

On April 14, 1924, an interstate conference was held at Pittsburgh, Pennsylvania. In addition to the representatives of the various state health departments, each byproduct coke plant located in the Ohio River drainage area was represented. The importance of the problem was thoroughly discussed and also ways and means of procuring necessary remedies. At this conference information was presented indicating that the only certain method of remedy is the entire discontinuance of discharging into streams the waste water containing the taste producing constituents. Two methods of accomplishing this result were discussed. The first one, generally favored and up to the present time most generally used, includes the evaporation of the liquid wastes by using them for the quenching of the hot coke. The other method which is in the experimental stage includes the recovery from the wastes of phenol and possibly other taste producing compounds.

Legality of Health Department Jurisdiction: Some question has arisen as to whether a state health department can legally enforce a remedy. This question arises no doubt due to uncertainty as to the causation of specific disease by taste producing industrial wastes. There are four possible ways in which industrial wastes of this kind may affect public health: (1) The presence of phenol in drinking water may exert directly a deleterious effect upon the health of persons using such water for drinking purposes. (2) The existence of an offensive taste and odor in a public water supply discourages the use of water for drinking in the amounts necessary to promote health. (3) The existence of such tastes and odors likewise encourages the use of other sources of water supply which, while of pleasing physical quality, may be contaminated and unsafe. (4) The fact that chlorine treatment of a public water supply intensifies the tastes and odors, may result in a reduction of the amount of chlorine used, or the total suspension of the chlorine treatment and consequent failure to secure sufficient purification of the public water supply. There is also a certainty that public comfort is affected by the presence of objectionable taste and odor in a public water supply. The fact that the water is rendered unpalatable for drinking, offensive for cooking and culinary purposes and improper for use in bathing and other domestic uses attests an effect upon public comfort if not public health.

These facts have been recognized in legal opinions rendered by the Attorneys General of the states of Pennsylvania and Ohio, who have ruled that the respective state health departments have jurisdiction to enforce remedies where found necessary.

A MILK BORNE EPIDEMIC OF TYPHOID FEVER TRACED TO A URINARY CARRIER

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THE outbreak here recorded occurred in Portland, Oregon, in the spring of 1924, and consisted of twenty-six cases with five deaths. All of the cases were found to be customers of a single dairy delivering raw milk, and it was subsequently determined that a milker at this dairy was excreting typhoid bacteria in large numbers in his urine. The detailed results of an investigation of the outbreak are given below.

Portland is a city of about 300,000 inhabitants. The water supply has its origin in the drainage from an inacessible watershed, and is delivered without any treatment whatever except storage for short periods in reservoirs beyond the reach of human contamination. No epidemic has ever been traced to the Portland water; nor has it ever been under suspicion as the carrier of infection. The milk supply of the city is furnished by an exceptionally large number of small dairies. About 60 per cent of the total supply is pasteurized, the rest being delivered from about 180 independent raw milk dairies.

The city has the reputation of having a very low typhoid morbidity rate. The Health Bureau records show that from December 1, 1923, to March 4, 1924, not a single case of typhoid was reported as originating in the city.

On March 4 the first case was reported in the person of a railroad worker who had had many opportunities for acquiring the infection. Following this there were reported one case each on March 6 and 7, three cases on March 10 and one each on March 15 and 19. In accordance with routine, epidemiological data was secured from each case.

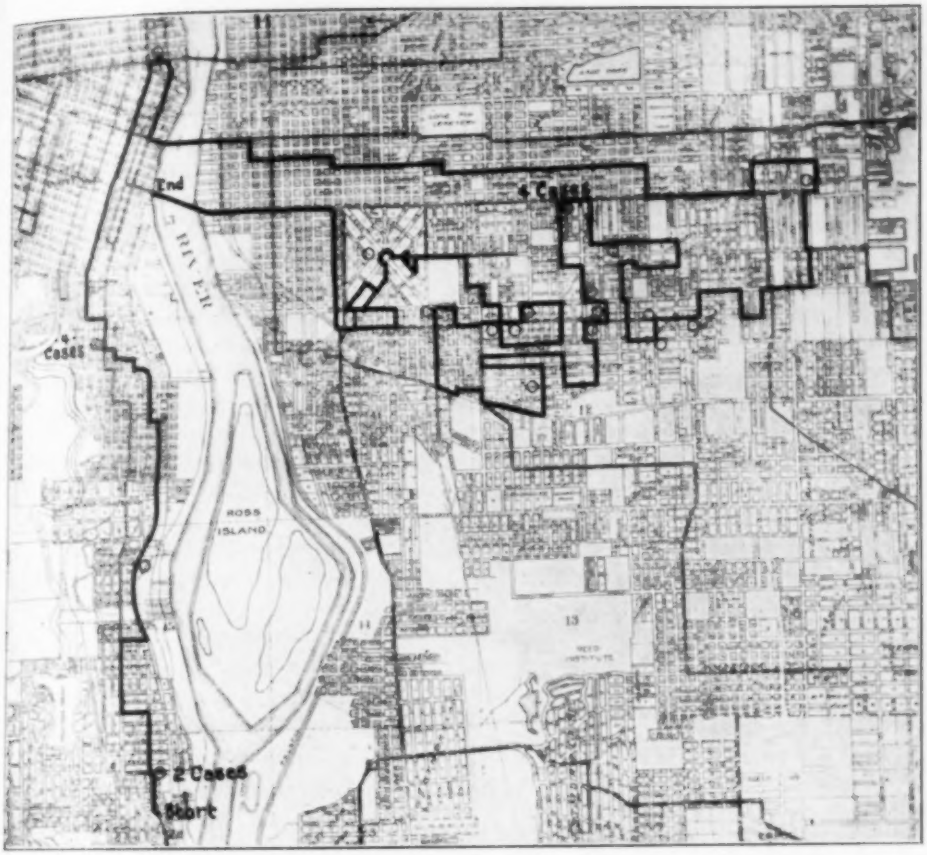
An inspection of this data showed that all of the eight cases reported were in families taking milk from the R. H. dairy. This dairy, located about 3 miles south of the city, consists of a herd of about 80 cows, owned and operated by A. W. B. and his son O. B., who with the latter's wife and year old child lived in the ranch house on the premises. Three additional men also living at the ranch house were employed at the dairy chiefly as milkers.

At the time of the first investigation it was stated by the owners that all of the men had been with them for more than a year, and that no others had been employed during that time. None of the seven persons at the ranch gave any history of a recent illness and all denied ever having had typhoid fever.

There was an open toilet at the dairy, but the time of year precluded the transfer of the infection by flies. Water was obtained from two sources, the regular city supply, and a spring on the premises. The latter was said not to be used but was available from faucets in the milk house. Samples from both sources showed B. coli to be absent. The epidemic seemed explainable only on the supposition that one of the employes at the dairy was a carrier.

On March 21 the laboratory of bacteriology of the Medical School was called and requested to assist in tracing the source of the outbreak and on March 22 stool specimens were collected from each of the five men at the dairy and examined for typhoid bacilli. All were reported negative.

On March 28, new cases having been reported in the meantime, City Health Officer Parrish ordered the owner to



Map of Portland showing relation of cases to milk route.

deliver no more milk from the dairy unless pasteurized. This order was complied with the next day, the pasteurization being carried out in one of the established plants in the city.

Some confusion was injected into the early part of the investigation by the fact that several of the cases were diagnosed by laboratories in the city as paratyphoid A, and in one or two as paratyphoid B on the basis of Widal reactions. One or two blood cultures, on the other hand, had been reported as positive for typhoid. It became necessary, therefore, to test the correctness of these diagnoses to determine whether we were dealing with a mixed epidemic. We did this by examining, on March 29 and 30 and April 1, specimens of stools and urine from eleven of the patients. A number of these were already in the convalescent stage, but we succeeded in isolating and identifying the typhoid bacillus in five cases, while the paratyphoid bacilli were not met with once. These results and subsequent reports from various laboratories of the finding of B. typhosus in blood, stools and urine of patients, definitely ruled out any admixture of paratyphoid in the outbreak.

On March 29 we again received specimens from the dairy workers, this time both stools and urine. Specimens from Mrs. B. and her baby were included also in this collection. The results were again negative. On examination of the names on the specimens, however, it was observed that one of the men previously cultured was missing. An investigation showed that a milker,

W. K., had left the dairy on March 23 and a new man had taken his place. W. K. was sought out and returned to the premises on March 30.

On April 1, stool and urine specimens were again collected from the dairy, W. K. being included. These specimens were obtained late in the evening and kept in the ice box over night. A number of suspicious colonies were fished from the Endo's plates but all proved negative when subjected to the usual cultural and serological tests.

On April 8, another series of specimens was collected. In the examination of this fourth series it was observed that the Endo's plate upon which a loopful of the urine of W. K. had been streaked, appeared to contain a pure culture of a non-lactose fermenting organism resembling B. typhosus. The organism was a Gram negative rod, but proved to be very sluggishly motile, in this respect resembling B. coli more than B. typhosus. Furthermore with a fairly potent antityphoid rabbit serum no agglutination occurred. The organism gave the fermentation reaction of B. typhosus, though on Russell's medium it showed a tendency to give a slight acidification on the upper part of the slope as well as in the butt of the tube.

Organisms of this sort are not infrequently met with in normal stool cultures; so we believed there was little chance that this one would prove to be B. typhosus. It was felt advisable to test it further, however, and after the growth of four or five generations on plain agar its agglutinating properties were tested again with an antityphoid serum.

Absolutely no evidence of agglutination appeared after two hours in the water bath; but after the tubes had remained all night in the icebox we were much surprised to observe very definite agglutination in all dilutions up to 1-6400. This same serum gave an agglutination of a stock laboratory culture of B. typhosus in a dilution of 1-8000. In the latter case, however, the reaction was complete after two hours in the water bath at 40° C.

Subsequent confirmation of the diagnosis on the organisms from W. K. was made by inoculating rabbits with it and also with a strain isolated from one of the patients. The serum from the animal immunized with the carrier strain agglutinated this strain in dilutions up to 1-2500, the strain from the patient in dilutions up to 1-1200, and a stock laboratory strain in dilutions up to 1-5000. The serum from the animal immunized with the patient's strain agglutinated the carrier strain in a 1-1200 dilution, its own homologous strain in a dilution of 1-2500 and the laboratory stock culture in a dilution of 1-5000. The carrier strain, even with its homologous serum, always showed late agglutination, no evidence of a reaction being observable after two hours in the water bath at 40° C.

The serum of the carrier, W. K., agglutinated his own organisms in a dilution of 1-160, those from two patients in dilutions of 1-160 and 1-320 respectively, and the stock typhoid culture in a dilution of 1-320. The serum from a patient agglutinated the carrier strain in a dilution of 1-80.

A diagnosis of the carrier condition having been made, W. K. was removed from the dairy and brought to the Multnomah Hospital adjacent to the Medical School laboratories where he remained under observation until June 9, a period of seven weeks. Numerous examinations of his stools and urine were made during this time. The former were regularly negative, the latter consistently positive. A more detailed study of this carrier is given below.

THE EPIDEMIC

The accompanying map shows the location of cases in the city in their relation to the milk route. The report of the first case came to the Health Bureau in the form of a death certificate upon which the cause of death was given as

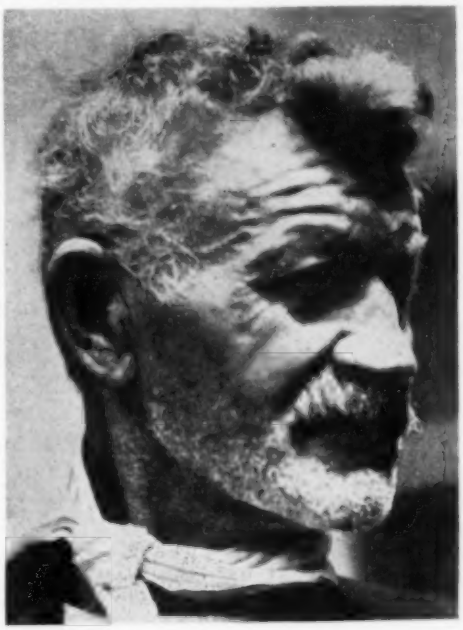
intestinal hemorrhage. It was learned later, however, that one of the physicians on the case had favored the diagnosis of typhoid. This person had taken milk from the R. H. dairy.

Two other cases were diagnosed as typhoid by clinical methods only. All the others were confirmed by laboratory tests. All the cases are known to have taken milk from the R. H. dairy except one, who lived at a hotel across the street from the one restaurant supplied with milk by this dairy.

Milk epidemics of typhoid are generally described as explosive in character. Such was not the case in this instance. The largest number of cases coming down in one day was three, and the rule was only one per day. Several periods of from five to ten days in length intervened when no new cases occurred. Except for the well-known variability in the length of the incubation period in typhoid, this might suggest intermittency in the infectiousness of the milk.

The dairyman's records show that at the beginning of the epidemic he was distributing a total of 396 quarts of milk daily. Among his customers were one hundred and seventy-five private families, one apartment house, one restaurant and four grocery stores. The latter sold the milk to their customers in the original bottles. Assuming a pint per day for each person, it may be estimated that about eight hundred people were drinking the milk from this dairy. It was the custom of the dairy to cool and bottle the milk immediately after milking. The bottles were kept cool in a vat of ice water until loaded for delivery. The route being short, only a few hours intervened between the milking and the time of delivery.

A possible explanation of the low incidence of typhoid among consumers, therefore, might be found in the assumption that cases occurred especially where the keeping time and the temperature in the home favored multiplication of the organisms. Against this supposition is the fact that in the majority of affected homes only one case occurred. Exceptions were a home in which four people, a mother and three children, were infected, an apartment house with four patients and another home with two. As in most milk epidemics of typhoid there occurred a higher incidence among



The carrier.

women and children than among adult men. The case mortality of 18 per cent is higher than is generally experienced in milk borne typhoid.

A few interesting deductions regarding the incubation period of typhoid are brought out in this investigation. The last raw milk from this dairy was delivered on March 28; thereafter pasteurization was carried out under conditions that we believe rule out the probability of any infection being transmitted in the milk. However, three cases had their onset about April 20, and one case as late as April 24. These cases all occurred among users of R. H. milk, and in families not previously attacked. There was nothing in the history of the cases

that pointed to contact infection from previous cases; so that it appears that they originated directly from the infected milk. If so, incubation periods of at least twenty-two and twenty-seven days respectively are indicated.

The time relationship between the arrival of the carrier at the dairy and the appearance of the first case is difficult to explain. The statement of the owner that all employees had been with him for a year was found on inquiry to be incorrect. The carrier, W. K., had begun work on December 8, 1923, and had worked continuously at the dairy from that time, chiefly as a milker. If we accept February 18 as the date of onset of the first case (the date given by the patient) we have an interval of about ten weeks between the first possible infection of the milk and the outbreak of the disease. The time of the year would, of course, decrease the probability of rapid multiplication of the organisms, while a part of the delay may be due to the organism having an unusually long incubation period.

THE CARRIER

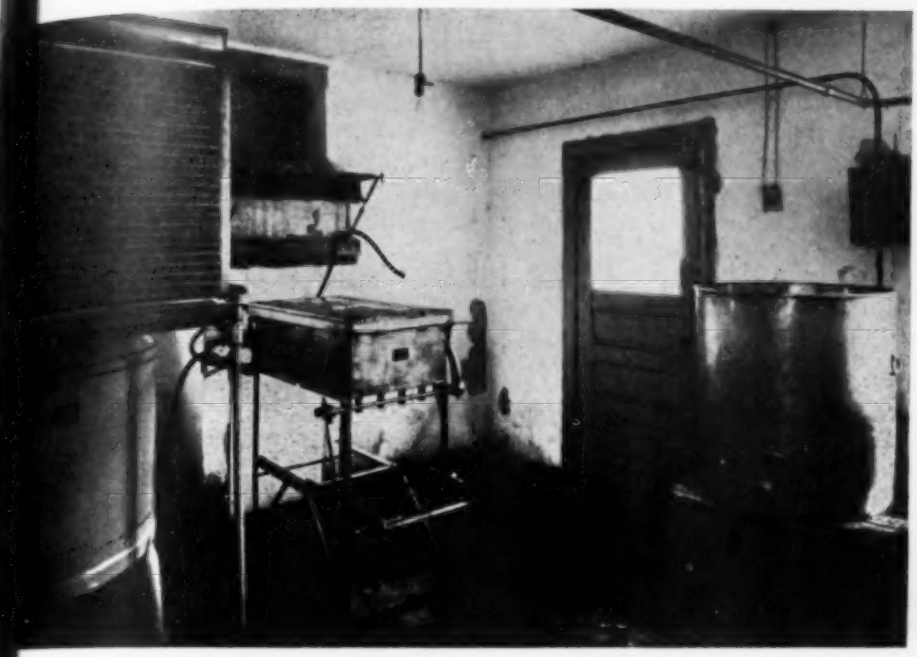
The carrier, W. K., is a Swiss by birth, seventy-two years of age, and has the appearance of being in excellent health. Except for a period of a year in San Francisco, he has lived in Oregon for 52 years. Just previous to his arrival at the R. H. dairy he had been living in central Oregon on a wheat ranch for about 12 years. During all the rest of the 52 years he has been engaged in the dairy business in and about Portland. His history was entirely negative with respect to typhoid; in fact, he stoutly maintained that he had never been sick in his life except for an occasional cold.

The very incomplete information that could be gathered about his associations previous to going to the ranch in central Oregon in 1912, gave no indication of his ever having been related to any typhoid cases. He himself could not recall ever having heard of a typhoid epidemic in his neighborhood, and no dairy with which he had been connected had ever been under suspicion as the source of typhoid infection. It seems likely that his infection must have occurred at some time during the period between 1912 and December, 1923, while he was not in any way associated with the handling of milk, and that the present outbreak is the only one for which he is responsible. This is by no means proved.

After W. K. was brought to the hospital on April 18, he was placed in sanitary isolation under the care of the urological staff. Samples of urine were examined daily for ten days and at intervals of a few days thereafter. Every sample showed very large numbers of typhoid bacilli. Total counts were made on a number of samples and figures varying from 500,000 to 10,000,000 per c.c. were obtained. The majority of specimens gave the higher figure. A microscopic and chemical examination of the urine showed a large amount of pus, a few hyaline casts, no sugar, and only a trace of albumin, the pH was generally about 6.4.

A detailed clinical report of the case will be published elsewhere by Dr. H. W. Howard who made the study; but it should be stated that the focus of infection seems to have been quite definitely located in the seminal vesicles. The vesicles were much swollen and the fluid expressed by massage showed many pus cells and a pure culture of typhoid bacilli. The prostate was normal, and cystoscopy showed both kidneys free from infection. Repeated massage of the vesicles reduced them to normal size and the very small amount of fluid expressed on the last occasion was sterile.

On May 13, treatment with urotropin was started, salol coated tablets being given twice daily together with sodium acid phosphate to insure an acid urine. The effect of this drug was at once evident in the reduction in the number of organisms excreted. Total counts after this treatment was started varied



Interior of milk house showing mixing vat, bottler and cooler. The pasteurizer in the lower left hand corner was installed after the outbreak.

om 5,000 to 50,000 per c.c. Not a ngle specimen, however, failed to show me typhoid bacilli. On June 2, five ys preceding his release from quaran-ne, a single loopful of the urine plated Endo's agar gave numerous colonies entified by specific agglutination as B. phosus.

It is obvious that this man is still a rrier. He was released under orders ver again to engage in the handling foods for human consumption. During s period of quarantine he came to the boratory frequently and an attempt as made, with ill success, to impress on him the seriousness of his condi-on, and to educate him in the means of reventing any further dissemination of phoid infection. He entirely failed, or efused, to comprehend the danger, and hen this is taken into consideration, to-ether with the fact that for more than fty years he has earned his living chiefly milking cows and knows little of other rms of labor, it must be expected that e closest surveillance will be necessary to make certain that he does not again engage in this occupation.

SUMMARY

The main facts brought out about the epidemic in the foregoing study are as follows:

Twenty-six cases of typhoid fever with five deaths resulted from the drinking of the unpasteurized milk of a dairy serving not less than eight hundred persons.

The outbreak showed the high incidence among women and children characteristic of milk borne typhoid, but was not explosive in type, and the mortality was somewhat higher than is usually experienced.

The origin of the infection was traced to a milker at the dairy who was shown to have a seminal vesiculitis due to B. typhosus, and was as a consequence excreting this organism in enormous numbers in his urine. The organism was never isolated from his stools.

Treatment of the vesiculitis by massage

and administration of urotropin greatly reduced the number of typhoid bacilli in the urine of the carrier, but did not wholly rid him of the infection. He remains a carrier.

The epidemic was brought to an end even before the detection and removal of the carrier, by ordinary commercial pasteurization of the milk.

Evidence is adduced of an unusually long incubation period in four cases of typhoid, three of which had their onset twenty-two days, and one twenty-seven days after the last raw milk was delivered.

REPORT OF THE COMMITTEE ON INDUSTRIAL HYGIENE

Read before the Conference of State and Provincial Health Authorities of North America, Lansing, Michigan, June 17, 1924.

THE Committee on Industrial Hygiene has been making annual reports for two or three years covering the relations of the subject to state and provincial health authorities, but thus far without evidence of progress or results. Perhaps an exception to this statement may be said to lie in the fact that its recognition as a proper function of this body has been recommended by the Committee and the scope of its field defined. (See Reports of previous years.—A.J.P.H., Oct., 1922, p. 839; Aug., 1923, p. 642.)

Believing that there is considerable uncertainty in the minds of many in regard to the nature of industrial hygiene and its claim for recognition at this time by this body and in view of the relative newness or recency of the field which it claims to cover, your Committee wishes to make several recommendations as follows:

(1) It is recommended that one or two tangible points in the field of industrial hygiene be attacked by members of the Conference in their respective states and provinces in order to establish factual data that may form a working basis for procedure in the future.

(2) It is recommended that, for the present, the end results only of faulty industrial hygiene be considered; viz., *Occupational Diseases.*

(3) While recognizing that several states and provinces now require the reporting of occupational diseases as a feature in "notifiable diseases," we believe that with the exception of half a dozen places, little is actually being done to secure data regarding them.

The Committee recommends that each state and province create a position, part-time or full-time as the situation would appear to warrant, or an office, bureau, or division of occupational diseases for the purpose of ascertaining, (a) the prevalence of occupational diseases, and (b) the correlation between morbidity and mortality statistics and occupations.

(4) It is recommended that in order to facilitate the duties of such office of service, each state and province, if it has not already done so, institute a regulation or secure the passage of a statute requiring the reporting of occupational diseases as separate and distinct items by all licensed physicians, the reports to be made to the state or provincial health authorities upon special certificates or blanks (preferably the so-called "standard form") to be devised by such authorities.

(5) In order to give appropriate publicity to this procedure, it is recommended that physicians and local health authorities be circularized in regard to the said regulation or statute and that there be sent to each licensed physician and health officer several such certificates or forms for reporting occupational diseases.

(6) It is recommended that annual reports upon a simple form approved by this Conference, which shall summarize the state and provincial statistics in regard to occupational diseases, be collected by state and provincial health officers for the purpose of their compilation by this Conference or such authority as it may designate.

JOHN E. MONGER, M.D., *Chairman.*

IS THE ROUTINE PROPHYLACTIC USE OF DIPHTHERIA ANTITOXIN JUSTIFIED?*

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THE FACT that diphtheria antitoxin neutralizes diphtheria toxin in the animal body as effectively as it does in the test tube is well established. The product of the diphtheria bacillus which causes symptoms unites so avidly with its specific antibody that injury to the patient's tissues is stopped upon the arrival of antitoxin, the results of the intoxication depending on the extent of the damage done up to that time. As a phophylactic agent antitoxin will effectively prevent the occurrence of diphtheria intoxication so long after administration as the antitoxic principle remains in the blood and tissues; a tiny amount, not more than one-thirtieth of a unit per cubic centimeter in the blood and tissue fluids is probably sufficient.

The ability of antitoxin to prevent diphtheria was clearly established by Behring and Kitasato in 1890 and those persons concerned with the promotion of the public health were not slow in seeing the potentialities of this agent; it seemed that through its universal application diphtheria might be completely eradicated. Such prophylaxis combined with the segregation of convalescents made the outlook seem particularly bright. The relative failure of the latter measure to have a marked effect upon the incidence of the disease was probably explained when the rôle played by the bacteriophore was recognized. In any center of population there are many carriers of virulent diphtheria bacilli and relatively few of them have ever had clinical diphtheria. Convalescent carriers are but a small proportion of the total number, and this may be one reason why the segregation of convalescents has not resulted in a reduction of the general diphtheria morbidity.

The prophylactic application of antitoxin has little more to boast of in its influence upon the morbidity rates. The measure is based upon sound scientific evidence, and yet in its application as a public health measure it has been a practical failure.

The failure is not due to a lack of potential value of the measure itself. Diphtheria antitoxin can prevent diphtheria. Doull and Sandidge (1924) have recently studied the incidence of diphtheria among treated and untreated family contacts. They have found, as all the others who made such studies long ago also learned, that antitoxin has much in its favor. Of the children who did not receive antitoxin, 10 per cent were attacked, while only 1.2 per cent of those immunized with antitoxin came down with the disease.

It is true that the usual prophylactic dose given toward the end of the incubation period may be insufficient, and that the passive immunity in a previously uninjected person cannot be depended upon for more than twelve days (Park, Williams and Krumwiede, 1920), and that in persons who have been previously injected with horse blood serum protein the refractory period may be much shorter; but, eliminating these factors, its preventive effect in individual cases, and especially in contagious disease hospital practice, has not for many years been in dispute.

The failure is not due to inadequate education of those concerned with its use. Every student of medicine upon graduation is thoroughly instructed with regard to the indications for diphtheria antitoxin according to the views of his teachers. After commencing the practice

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of his profession, his board of health keeps constantly before him the fact that diphtheria is preventable and eradicable, and probably makes available an ample supply of antitoxin without cost to the patient.

Undoubtedly the educational campaign inaugurated in the earlier days of antitoxin and still carried on by certain teachers and writers was overdone. Experience has brought a change in the opinions held and in the instructions given by those who have closely followed developments in our knowledge of diphtheria. This is interestingly illustrated by referring to the various editions of some of our standard textbooks. For instance, in the first (1913) edition of Rosenau's Preventive Medicine and Hygiene, p. 149, is the following:

"It may, however, be controlled with every assurance of success by the application of well-tried measures. It is customary first of all to give a prophylactic dose of antitoxin to all persons within the institution, including both inmates and administrative force." . . . "When diphtheria antitoxin is used as a prophylactic, the dose is 1,000 units, which should be repeated every ten days or two weeks—as long as danger persists."

In the fourth (1922) edition we find the following:

"Where large numbers are involved the method is very expensive, time-consuming, and the resulting serum reactions often disturbing, especially where repeated immunization is called for. A blind reliance upon antitoxic immunity has proved disappointing and futile in many institutional outbreaks. In the end, the active immunity induced by toxin-antitoxin mixtures does not take much more time and is much more certain.

"Antitoxic immunity has a distinct place in personal prophylaxis and in selected individual cases, especially in family practice, but will gradually be replaced with active immunization."

If we should go farther back than 1913 the insistence upon prophylactic injections would be found mandatory. It is clear that even ten years ago this author had only moderate faith in the "customary" procedure.

The failure of passive immunity to play the important rôle expected of it as a great public health measure is attributable to causes which deserve thorough discussion, for thereby we may see clearly the futility of further argument for its routine application. So far as our present knowledge is concerned the important factors involved may be reviewed under four heads:

1. Lack of effect upon the infection itself.
2. Limitations of passive immunity; the time of its appearance and its duration.
3. The foreign protein vehicle of the antitoxin. Serum rashes, serum collapse, sensitization, increased rapidity of elimination with repetition.
4. Difficulties in the selection or identification of those who should be passively immunized.

LACK OF EFFECT UPON INFECTION

Numerous attempts have been made to prepare a bactericidal anti-diphtheria serum, but so far these have not been successful. The specific function of the antitoxin is to combine with and neutralize diphtheria toxin. Diphtheria antitoxin does not prevent infection nor the establishment of the carrier state, nor does it hasten the end of the latter.

In the course of an epidemic a dangerous newly produced or incubationary carrier might remain undetected through the prophylactic use of antitoxin; this is a source of danger in inverse proportion to the care and thoroughness with which cultural studies are made. The fact that a person immunized by antitoxin may still carry virulent bacilli in his throat makes him a menace to himself at the end of his brief immune period if the carrier state should fail to be recognized. Boards of health generally demand cultures from all contacts and usually require that those who receive prophylactic antitoxin be quarantined, as are the patients, until negative cultures are obtained. Failure to carry out this program faithfully would defeat the anti-diph-

phera program at a most vulnerable point. The average physician believes his duty has been well done when he has pulled the needle from the subcutaneous tissues, and if immunized contacts are not quarantined the possible effect is obvious since 50 per cent of family contact children not immunized come down with the disease. On this ground alone one is almost led to suggest that it would be better for the public health if all such contacts were permitted to identify themselves by clinical symptoms, in those communities where the board of health regulations cannot be rigidly enforced.

OBJECTION TO PASSIVE IMMUNITY

A valid objection to the use of passive immunity routinely lies in its interference with active immunization. The injection of the diphtheria toxin-antitoxin mixture into a person whose tissues have not eliminated a previous dose of antitoxin, fails to have an immunizing effect in much the same way as does a mixture of toxin and antitoxin with the latter present in excessive amount. Failure to recognize this possibility might result in the waste of valuable time or in no immunity at all. The miscarriage of the procedure would not be detected in any case until the lapse of six or eight weeks, when the immunity test is repeated—and all too frequently this part of the program is omitted.

The value of passive immunity is restricted therefore to the protection it affords susceptible individuals should they become infected while there is still enough of the antitoxin in their tissues to prevent the development of intoxication. Its use should not relieve the attending physician from the responsibility of making cultural studies.

LIMITATIONS OF PASSIVE IMMUNITY

In the establishment of the passively immune state there is a definite delay due to the slow absorption of the antitoxin from the subcutaneous tissues, and if the injection should be made toward the end of the incubation period the dosage might be insufficient. The maximum prophylactic dose is commonly 1000 units, and it is obvious that this amount injected at a time when there is already considerable toxin in the blood might fail even to delay the appearance of clinical symptoms. The duration of passive immunity is variously stated to be from ten days to four, six or eight weeks. Park (1920), who gives the dependable period as from twelve days to three weeks, made careful studies upon this point and his conclusion that the period is brief is supported by the experience with tetanus in France during the war. This led to repetition of the antitoxin after seven days if the state of the wound still indicated danger of tetanus.

If the susceptible individual is exposed a second or third time, or more, the problem may become complicated. There is experimental evidence which indicates that an individual sensitized by a previous dose of horse serum will eliminate his antitoxin with greater rapidity, and that this tendency is increased with each injection.

Diphtheria antitoxin may be looked upon as a reliable preventive of diphtheria during the period beginning about twenty-four hours after its injection and ending not earlier than twelve days later, provided the treated individual has not previously received an injection of horse serum or globulin, and is not allergic with regard to horse blood proteins.

SENSITIZATION, SERUM RASHES AND COLLAPSE

An important difference between active immunity and passive immunity in man is that the latter is acquired through the administration of immune bodies carried upon a vehicle foreign to his tissues. In laboratories engaged in the production of immune serums and antitoxins it is customary to keep the horses immunized to tetanus. This may be accomplished through the injection of as small an amount as 200 units (Hitchens, 1910), and the dose need be repeated only once

a month. To prevent the occurrence of tetanus in wounded soldiers during the war it was found advisable to give them from 500 to 1500 units of antitoxin and to repeat the dose every seven days. The reason for this difference is attributable to the fact that the horses receive with the antitoxin, and as its vehicle, substances which are not foreign to their tissues. Passive immunity conferred through homologous serum approaches active immunity in its solidity and its duration.

To the human subject the chief disadvantages attending the production of passive immunity concern the foreign proteins with which the antitoxin is associated. If at some future time protein-free antitoxin is available our whole diphtheria program may be modified.

Our knowledge of the effect of a primary dose of horse blood serum protein upon subsequent injections, and of its absolute importance in human practice, is by no means complete. The changed reactivity of the tissues to the reinjection of foreign protein has been carefully studied experimentally in certain animals. While the manifestations of hypersensitiveness vary widely in the different species, the underlying cellular and humoral changes resulting from sensitization are probably identical. So that, although with the doses commonly employed, human subjects do not exhibit symptoms like those produced in laboratory animals, there can be elicited an altered reaction rate and in many individuals precipitins can be demonstrated.

Hooker (1924), by means of intracutaneous tests, has recently shown that following the tiny amounts of horse serum used in the diphtheria toxin-antitoxin mixture "a noteworthy proportion of human subjects become hypersensitive to horse serum." Park (1924) has corroborated to a certain degree the observations of Hooker, but emphasizes the fact that "the sensitization is not so marked as that developing after larger dose of antitoxin for passive immunization." Longcope and Rackemann (1918) found that "the injection of horse serum either in small or in large amounts in human beings is always followed sooner or later by the development of hypersensitiveness of the skin to subsequent injections of horse serum" and that "the blood serum of most patients who suffer from an attack of serum disease following injections of horse serum shows anaphylactin and precipitin for horse serum."

EFFECT OF PROTEIN ADMINISTRATION

We know then that the parenteral administration of a protein—of antitoxin—leaves a definite impress upon the tissues of the individual injected. The effect of this upon subsequent injections may be of importance in three ways.

First, the so-called serum disease may be accelerated in the time of its appearance; it may be more likely to occur, and it may be more severe. This is not a serious or dangerous objection, but it is an annoying sequel and may cause great discomfort. A previous injection is almost a guarantee against fatal serum collapse from small subcutaneous doses, although in the series studied by Lamson (1924) there was a history of previous injection of foreign protein in at least three.

Second, the elimination of antibodies may be hastened. The work of Longcope indicates that the rate of removal of horse serum from the tissues depends on the formation of precipitin. The relation between precipitin formation and the removal of antitoxin after repeated doses has been studied in rabbits by Glenny and Hopkins (1923). Of their conclusions the following may be quoted:

"1. There is some evidence that an injection of 0.00001 c.c. of horse serum causes an appreciable degree of active immunity to horse serum in rabbits.

"2. Rabbits actively immune to horse serum receiving a series of injections of antitoxic horse serum at intervals of three to ten weeks eliminated the antitoxin at rapidly increasing rates.

"3. An intravenous injection of antitoxic horse serum given six weeks after the second of a series of 0.5 c.c. in a rabbit already actively immune to horse serum was eliminated so rapidly owing to excess precipitin that less than 1/1000th remained 24 hours after injection.

"4. Another rabbit which, six days after a previous injection, was given serum intravenously, lost over 99 per cent of the antitoxin within 15 minutes of the injection.

"5. The maximum of circulating antitoxin detected after the second subcutaneous injection into a sensitized rabbit was only 1/15,000th of the amount injected.

"6. Antitoxic horse serum injected intravenously into rabbits at weekly intervals was rapidly eliminated and less than 2 per cent could be detected 24 hours after each injection."

While we have no exact observations relating to the importance of the accelerated removal of antibodies following several doses of serum in human practice, and while this phenomenon has never seemed of great moment, it is obvious that if all individuals were treated according to the older instructions, those repeatedly exposed to infection would soon give us material for study.

Third, the reactions following large intravenous doses of horse serum protein may be more severe. The alarming and the fatal reaction following small subcutaneous doses of serum have nearly always occurred in persons not injected previously. It seems that only natural sensitiveness is so great as to produce severe reactions; the allergic state acquired by a previous injection is a much lower grade of intolerance. Therefore, persons who possess natural sensitiveness are identified through their first dose of horse serum protein, and if they do not react violently to their first subcutaneous injection, there is little danger that a second would be severe. This fact is sometimes used to support the assertion that all second (or subsequent) injections may be given without fear. So far as subcutaneous administration is concerned this is probably true; but it is obvious that we cannot make such a prediction when a large amount of protein is to be thrown into the blood stream. Recorded cases give us little information upon which we may base an estimate of the proportion of alarming reactions that occur under these circumstances; but they do occur and with considerable regularity.

In addition to the reactions which depend upon a state of induced sensitization, certain individuals manifest symptoms which cannot be shown to be the result of an acquired state. These follow the first dose of horse protein and are of two main types: the serum disease, a prominent symptom of which is urticaria; and serum collapse, frequently ending rapidly in death by paralysis of respiration. The former is practically never serious and at most causes mild discomfort for a day or more; the latter is rare. Yet these two phenomena do occur, and in spite of their relative insignificance they add to the demand that the procedure which induces them be withheld unless there is a clear indication for its use. Following the small amounts of purified antitoxin bearing globulin now used for immunizing purposes urticaria follows probably only 5 per cent of primary injections, and serum collapse develops only once in probably 100,000 cases. With constantly increasing careful history taking and preliminary intracutaneous tests, serum collapse, as Lamson (1924) points out, is actually diminishing. Theoretically then, no attention need be paid to these phenomena, but every physician has had to treat cases of serum sickness, and if he has never seen a case of fatal serum collapse one of his friends has and has made him well acquainted with all the dramatic details. (The chances are, furthermore, that his friend's case was never reported.) The result is that in spite of all the propaganda the traffic will bear, the average practitioner will not inject every contact with diphtheria antitoxin, and the more experience he has had the more likely he is to wait. Of all the causes of failure to apply prophylactic passive immunity in

general practice, this is the most potent and it will continue because it has grown up in the midst of and in spite of the most painstaking and insistent campaign of education on the part of the majority of teachers and public health officials. The instructions are usually so definite and so clearly admit the substitution of no alternative that when the attending physician decides to use his own judgment the result is too frequently merely neglect. If in the City of Baltimore, Doull and Sandidge (1924) could find so many neglected contacts, what must be the condition in other cities?

During the war tetanus antitoxin was used extensively prophylactically and large doses were injected therapeutically. In repetition of dosage a factor which was considered important was that of making the intervals short in order to avoid the development of sensitization. It is interesting to note that the evidence in favor of multiple dosage was by no means overwhelming. Bruce (1920) gives no information concerning the previous treatment of those cases of shock which he records. The following is quoted from the chapter on tetanus by Andrewes (1922) in the *British Medical History of the War:*

"As regards anaphylactic shocks, Bruce collected 49 cases from the records of home hospitals during the war, arising after the therapeutic use of serum. Twelve of the cases died. Comparing the different routes of administration in this respect, he calculates that shock followed the intravenous route in 6 per cent of the cases in which it was employed; the corresponding figures for the intrathecal, the intramuscular and subcutaneous routes were 2 per cent, 1.2 per cent, and 0.2 per cent respectively. The small subcutaneous dose used in prophylaxis seldom caused shock. Bruce calculates that about 2,000,000 such doses were administered in England during the war; only 11 cases of shock were reported and all recovered. It is probable that many slight cases of shock were not reported. Serum rashes were not uncommon even after prophylactic doses, and much more so after larger therapeutic doses."

The protein vehicle of the antitoxin is the cause in practice of occasional reactions sufficiently disagreeable and alarming to lead the family physician to desire their avoidance; in hospital and institutional practice they may be ignored. More serious in their ultimate possibilities are the results of sensitization should the individual's condition subsequently demand large intravenous or intraspinal doses of horse serum. Animal experiment indicates the possibility of rapidly increased elimination of the antitoxin contained in subsequent therapeutic injections; actually we have no knowledge concerning the importance of this in human practice.

IDENTIFICATION OF CONTACT DIFFICULT

It is well known that children from 6 months to 5 years of age, not known to be immune, are the most vulnerable to diphtheria infection, and these constitute the group which will demand the greatest care. If such children are found in a household where one member of it has come down with diphtheria, or if a child of this group enters a contagious disease hospital, the indications would be clear that there has been or may be "dangerous contact." Family contact will be intimate and relatively dangerous in comparison with the social condition of the family. In apartment and tenement houses or in alley dwellings where children from several families play much together, contact will not be restricted to the infected household. In such cases how is the selection of contacts to be made? When selection as a probable contact means an injection of serum, is not judgment likely to be influenced? Is not the number picked out likely to be the minimum number? By any stretch of the imagination is it conceivable that all the contacts in such groups would or could be identified? When we ask, "Contact with whom?" the problem of identifying the responsible carrier complicates matters still more. This difficulty is well recognized and it is the orthodox teaching to err on the side of safety. The result is that when the

routine practice is followed many more children are injected than are in actual danger. The figures reported by Doull and Sandidge (1924) indicate that but 10 per cent of those injected prophylactically were really likely to contract the disease. Naturally, even this small percentage would justify the procedure if there was no safe alternative.

When children reach the school age a certain proportion of them have acquired immunity to diphtheria and the risk of intoxication from infection is diminished. But it is only by actual test that such immunity can be ascertained, and untested children should theoretically be treated just as their younger brothers and sisters are treated.

Our personal interest centers chiefly about young adults, and our protest against the routine use of passive immunization was based on the management of diphtheria in the army (Hitchens, 1923). Intimacy of contact among soldiers in barracks or of sailors on shipboard is comparable with that among the members of a household. The difference is mainly in the size of the group. Those who still feel that routine passive immunization of all contacts is the best practice meet difficulties in army outbreaks which are well illustrated in a recent report made by Allnutt and Dickinson (1924).

"The outbreak occurred in an infantry battalion quartered in barracks in the center of a large city. Incidence of cases showing location and dates of occurrence:

Case No.	Barrack Room	Date of Incidence
1	17 D	June 7, 1923.
2	8 B	July 13, 1923.
3	23 E	Aug. 25, 1923.
4	18 D	Aug. 30, 1923.
5	13 C	Sept. 8, 1923.
6	13 C	Sept. 9, 1923.
7	1 A	Sept. 15, 1923.

"The barracks occupied by this unit were built before the middle of the last century, and did not conform to modern hygienic standards of ventilation and lighting.

"When to these disadvantages were added other factors, such as some degree of overcrowding together with insufficient spacing out of beds in the barracks rooms, the opportunity for the dissemination of such diseases as are usually spread by "droplet infection" was present.

"The General Measures taken to prevent spread of the infection included routine methods for isolation and disinfection, vide A. M. S. Regs., Appendix 2. All contacts were segregated and medically inspected daily for seven days, and gargling parades were also instituted after throat swabs had been taken. Orders were issued to the effect that any man complaining of sore throat or nasal discharge should report sick at once, and from such cases swabs were taken for examination."

It may be noted that in the management of this outbreak there is no suggestion that immunization with antitoxin was even considered. Suppose it had been used in barrack room 17 D following the appearance of the first case on June 7, 1923—nobody would have received any benefit from it for none of the contacts of the same room got diphtheria. The same is true with regard to all the other cases except those in Barrack room 13 C where the second case might have been prevented. When we note, however, that the second case came down within twenty-four hours, even this possibility is surrounded with doubt.

This example is sufficiently illustrative to constitute ample proof that passive immunization cannot be recommended as a measure to be applied in the suppression of diphtheria in groups of adults. It is not only difficult; it is simply impossible to select those for whom there is a reasonable indication for prophylactic immunization unless Schick tests and cultural studies are made.

When the circumstances are such that careful inspection of all probable contacts can be made, it is better practice to make twice daily examination than to inject antitoxin routinely. One of the most potent reasons for this conclusion is the difficulty in identifying the susceptible persons who were actually in dangerous

contact with the source of the infection, since the selection of individuals for inspection would be more liberal and more inclusive than for immunization.

When the circumstances are such that individuals of the most susceptible ages have probably been in dangerous contact with the infection, and careful twice daily inspection cannot be made, their safety demands immediate passive prophylaxis. Circumstances which might under this indicate the injection of antitoxin are: Impossibility of gaining information as in the cases of infants and intractable children; distance of the patient's family, as in rural practice. The number of children found from whom adequate information cannot be obtained will depend on the physician and his ability to gain their confidence and coöperation.

Prophylactic immunization is generally considered a routine measure and too frequently it is nothing more. The fact that the attack rate among the immunized is so high, 1.2 per cent against 10 per cent among those not immunized (Doull and Sandidge, 1924), is proof of this; 12 per cent of the immunizing injections failed to prevent the disease. The injection does not relieve the physician of all responsibility. Its use should be accompanied with such subsequent observation as would be given by the careful physician who prefers to withhold it. Its use in rural practice or as a substitute by the city doctor for daily visits may be attended with failure to accomplish the purpose for which it is recommended. Among contacts the presence of a membrane in the throat need not be demanded as a basis for diagnosis; any pertinent indisposition should be taken as an indication for the immediate injection of a therapeutic dose of antitoxin. The death rate in diphtheria when antitoxin is administered on the first day of the disease is nearly zero. Roberts (1923) has recently analyzed five hundred deaths from diphtheria occurring in New York State and has found that, in accordance with the conclusions of others, the death rate from diphtheria is essentially nil if adequate treatment is given on the first day of the disease.

This fact removes all statistical support from the conclusions of Doull and Sandidge (1924). Their arguments are based upon actual figures until they come to a discussion of the death rate and then they substitute an assumption. Of family contact children 10 per cent of those not immunized and 1.2 per cent of those immunized came down with diphtheria. How many of these children died? Is it reasonable to assume, as these authors do, that the death rate among secondary cases in a household will be treated as late in the disease as are primary cases? The first child may continue with a sore throat for three or four days before the doctor is called, but is the second or third likely to run on so long? Is it not more likely that treatment of secondary cases will be instituted on the first day of the disease or on the second at the latest? Among those treated on the first day the death rate will be zero, and among those treated on the second it will be about 3 per cent. If, on the other hand, the death rate among secondary cases is more than 3 per cent, it may just as well be 40 per cent as 7 per cent, since it is the result of gross neglect. The comparison of risks as calculated by these authors cannot therefore be considered as based upon a reliable assumption. In any case, using the figures quoted, 90 per cent of these children were needlessly exposed to definite risks —immediate and subsequent.

In summarizing our position with regard to the present status of passive immunity procured through the injection of diphtheria antitoxic horse serum protein, we could scarcely present the matter more clearly than by quoting from the volume on diphtheria by Andrews and others (1924) recently published by the British Medical Research Council:

"Passive Immunization.—From these records, therefore, it appears that the symptoms of diphtheria may be prevented in exposed children with a considerable degree of certainty by the injection of some 500 units

of antitoxin. No doubt the certainty of protection depends upon the degree of exposure, and in any case it is not effective if the subject is already in the incubation stage of the disease or after a period of some 4 weeks.

"The application of this fact to the practical management of an outbreak of diphtheria is not easy, but we may recite a number of considerations which are observed from the bacteriological viewpoint.

"Antitoxin does not prevent infection by C. diphtheriae; it, however, prevents intoxication and the signs and symptoms of this for a relatively short period after injection. Therefore it should only be given when the probability of intoxication is great, and when the circumstances are such that the intoxication may not be recognized rapidly when it occurs.

"For instance, when an outbreak of diphtheria occurs in a community which is under close medical observation, it would appear more satisfactory to discard prophylaxis by antitoxin in favor of immediate treatment of such persons as become intoxicated. If this attitude is adopted, injection of persons already immune will be avoided. It should also be remembered that the injection of antitoxin has the effect of interfering with active immunization . . .* and thus some persons who might have become immune naturally by unrecognized infection may be left in a susceptible condition if antitoxin is administered.

"When the outbreak occurs in a community which is not in close touch with medical observation and when the circumstances are such that the probability of other cases occurring is great, then the use of antitoxin may be considered. Such instances will be confined to communities of children, since adults are so frequently immune naturally that the likelihood of other cases occurring is not so great.

"It may be remarked that the prophylactic injection of antitoxin has certain objections both practical and theoretical. We have already noted that active immunization, which is much more permanent and therefore satisfactory, is rendered abortive; but, further, if a child develops diphtheria after the effect of the antitoxin has passed off, the therapeutic injection may possibly be rendered less effective owing to the presence of precipitins in the blood and, possibly, may be rendered more toxic by the existence of an acquired hypersusceptibility to the horse serum.

"The prophylactic injection of antitoxin should, therefore, be looked upon as a weapon for use in serious emergencies, which are rare, and even then as a palliative which may leave the state of emergency to develop again in 3 weeks. It will be a matter for individual consideration whether in any particular case it is not more satisfactory to proceed at once along the lines of separation and active immunization of susceptibles by means of Schick's test and toxin-antitoxin mixtures rather than to establish a sense of security which is sometime false."

* See page 337 of book by Andrews and others listed at the end of this article.

THE MANAGEMENT OF DIPHTHERIA

In offering such destructive criticism of a procedure which has failed to reduce materially the incidence of diphtheria during the past twenty-five years we do so the more freely since we have confidence that there is now a more promising method. While active immunization of large sections of the population involves tremendous labor, and is not likely ever to be universal, it is effective wherever it is faithfully applied. Furthermore, those who are willing to take the trouble are the ones who are directly benefited.

Every case of diphtheria can be used to push forward the campaign for the more widespread application of active immunization, and a plan for the management of the disease should take this into consideration. On this basis and as a result of the foregoing study of reasons for the failure of passive prophylaxis to reduce the incidence of diphtheria, and of certain practical and theoretical objections to its application, the following is submitted as a plan for the management of diphtheria.

1. The patient, immediately upon the establishment of probable diagnosis, will receive an adequate dose of diphtheria antitoxin and be placed in isolation. Make cultures from the seat of the disease for confirmation of the diagnosis. When the diagnosis is settled clinically or bacteriologically, or both, consider the removal of the patient to a hospital. Return to the proper health authorities what-

ever information may be required by local regulations.

2. Make a list of other members of the household and of probable contacts outside the domicile. Record especially their ages and any knowledge possessed concerning their susceptibility to diphtheria. The nature and extent of this survey will depend upon circumstances; army, navy and institutional outbreaks will require obvious modifications. Gather all information possible which may lead to the identification of the source of the infection—*e.g.*, other cases, general prevalence, character of the outbreak.

3. Inspect carefully the throats of the probable contacts listed and search for any symptom of diphtheria. Those showing lesions or symptoms will be immediately treated as patients. Make cultures from the nose and throat of each member of the group and extend this survey beyond the group listed as rapidly as time and the indications permit. Isolate carriers of virulent bacilli and examine them twice each day. The first evidence indicative of diphtheria will call for an immediate therapeutic dose of antitoxin. Persons known to possess antitoxic immunity who are not carriers will require no further consideration.

4. If any of the probable contacts are so young, or are children so intractable as to make inspection of their throats a practical impossibility, and they are not known to be immune, inject them immediately with 1000 units of diphtheria antitoxin. Previous to making the injection ascertain whether or not they have ever shown symptoms of an allergic state toward any protein, and especially with regard to horses, and inject a tiny amount of the serum intracutaneously to test for intolerance to horse serum. In case hypersensitiveness is discovered withhold the serum until it is indicated for treatment; then attempt desensitization treatment. Attend all individuals injected with antitoxin as though they were patients and release them only when two negative cultures have shown that they are not carriers of virulent bacilli.

5. Make Schick tests upon all the others on the list except those known to be immune. Extend the survey of susceptibility to outside persons, making it as inclusive as conditions will permit.

6. Examine the Schick tested contacts carefully twice each day for seven days and if any one of them exhibits symptoms indicative of diphtheria treat him immediately as a diphtheria patient (Par. 1 and 3).

7. At the end of from four to seven days begin the immunization, with toxin-antitoxin mixture, of all persons found susceptible. About four to six months after the third dose test them again for susceptibility.

8. As convalescence begins, release cultures from both nose and throat of patients should be made. If the carrier state is protracted, the cultures isolated should occasionally be tested for virulence; surgical interference should be called upon to aid in the elimination of virulent bacilli should they tend to persist. This may involve the removal of tonsils or adenoids or a nasal operation. The contact carriers should receive the same attention.

9. Convalescent and contact carriers should be kept in isolation until two consecutive cultures taken at about three day intervals from both nose and throat fail to reveal the presence of virulent diphtheria bacilli.

The above plan will be varied by circumstances. A milk borne epidemic, for instance, will show definite characteristics and call for the identification of the source.

CONCLUSIONS

A discussion of the use of diphtheria antitoxin for prophylactic purposes indicates that this field of this remedy is a narrow one. Diphtheria antitoxin is so perfect a therapeutic agent that it is safe to wait until the disease has manifested itself except possibly in the case of cer-

tain young children, provided those who have been in dangerous contact with the disease are meanwhile under careful observation. Diphtheria antitoxin is not a substance which should be administered in a routine manner or when there is not a clear indication for its use. Its administration may be followed by immediate or remote consequences of a disagreeable and possibly of an alarming or dangerous nature. Through masking the freshly produced carrier state among contacts the routine use of antitoxic prophylaxis without subsequent cultural studies might be a potent factor in maintaining the prevalence of diphtheria. Active immunization, on the other hand, is full of promise and the occurrence of a case of diphtheria provides the strongest possible argument for the extension of its application.

Since the preparation of this paper a contribution on "The Rapid Control of Diphtheria Outbreaks in Institutions" by Okell, Eagleton and O'Brien (1924) has appeared in the *British Medical Journal*. Their plan is essentially identical with that noted above. They advise the segregation of the inmates of an institution in accordance with Schick test results and "For a few days, see twice daily all 'Schick positive' reactors." The use of the prophylactic injection of antitoxin is not recommended.

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IMPROVEMENT OF THE SANITARY PERSONNEL

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INSPECTION is the most abused activity undertaken in the name of public health. The term itself is enough to cause the public to bristle with antagonism. It brings up a vision of being questioned, of being suspected, and of having to prove innocence of wrongdoing. Such a vision, whether it be based on fact or fiction—doubtless it is based in part upon each—is not conducive to the improvement of public health by public desire or public demand.

Too little attention has been given this phase of health work. In no other field is there seen such a diversity of laws, rules and regulations, such a dispersion of ideas, or such a variety of methods. Lack of standardization in the so-called sanitary inspection divisions of health departments is the thing which strikes the observer most forcibly. In other health activities some measure of standardization has been accomplished. In this one individual experience is the only knowledge used. However, public health science has advanced to a point where we should use the knowledge gained by the experience of others. The lack, therefore, seems to be in the proper collection and transmission of such knowledge.

Three approaches leading to the improvement of this activity of public health, present themselves:

1. Greater interest in improvement and standardization upon the part of state departments of health.
2. More definite courses of study in those schools which are carrying on the education of public health administrators.
3. Courses of study for the personnel of sanitary inspection divisions.

With regard to the first approach it may be said that a few—too few—state health departments have given attention to this work. There has been some attempt at standardization and education, with an examination to determine the fitness of those already doing, or desiring to take up, this work. Such a procedure will produce beneficial results, providing there is some interstate co-relation with regard to education. Without such interstate co-relation we can expect to see 48 different standards.

The second approach, education of public health administrators, must be followed, regardless of what is done with the first or third. It is the administrator who often gives the first training to the inspectors. This is especially true of the administrator who inaugurates a full-time health department in the smaller city or a rural area. Often he has not the power to select his future inspectors, but must educate the men made available through a governing body's appointments.

If the administrator must play the rôle of teacher in the education of his personnel, he must be given a definite groundwork for such teaching. Such a foundation must be broad enough to encompass the problems met in rural-urban sanitation. It must be so planned that the student in public health administration can answer the following questions affirmatively: Can I, with the raw-material personnel which will be available, build up an adequate and efficient inspection division? Do I know what steps should be taken to improve the milk supply, the meat supply, water, rural sewage disposal, garbage disposal, and the other phases of sanitation? If he can answer these questions affirmatively his future path will be much less rocky.

It is through public health courses in universities that knowledge by the experience of others can be transmitted.

The transmission of such knowledge must be accomplished by those who have experienced, and have studied the problems which confront health departments in the United States. Too much emphasis should not be placed upon the problems or methods of solving the problems in any one state or any one district. Such is frequently the case and as a result when the student of health administration takes up his work in some far distant state he finds himself in the unenviable position of possessing the solution to certain problems which existed near his university, but do not exist in his new surroundings. Those problems which do appear cannot be solved by his university formula unless it be a broad one.

The third approach, courses of study for the present personnel of sanitary inspection divisions, is difficult. The viewpoint of many inspectors requires a complete overhauling. The term "inspector" or "inspection," as stated in the opening paragraph is exceedingly provocative. It would be far better to do away with these words as they relate to public health. "Sanitary Instructor" or "Division of Sanitary Instruction" appears to be a better expression, and certainly one which denotes the type of work which should be carried on. A man with the title of "Instructor," and imbued with the importance of his work, is a public health educator. The mental reaction to a title of this kind means a stimulus to improved work. It serves to remove the feeling that, for success in his field, he must continually find fault and be a well-known figure in the court rooms. It is all very well for him to read that, for success, he should possess tact, judgment, strength of character, forbearance, and all the other attributes of only those recently deceased. If he is an "Inspector," he sees his work as that of skeptical inspection rather than tactful instruction.

No better method for the improvement of sanitary instructors could be devised than attendance at a university summer session where emphasis is placed upon courses in public health. It remains for the administrator who is interested in the improvement of public health and in the efficiency of his department to see that those subordinate to him shall be granted the privilege of increasing their value to public health.

The sanitary instructor should know more than the scoring of a dairy or restaurant, the abatement of a nuisance, or how to collect a sample of water. He should know something of general hygiene; something of the problems with which the public health nurse is faced; in short, something of what public health is trying to accomplish. He comes in contact with more adults than any other member of a health department; he is to a large part of the population almost the only evidence that there is a definite program of public health being undertaken. As such, he becomes, if properly used, a bearer of public health education. It is a wise health officer who does not overlook any method for furthering his campaign of education.

There also exists too often a public feeling of "over-inspection." There is cause for such feeling when rooming houses are placed under the observation of one man, bake shops under another, meat markets under another, etc. It is farcical, as well as inefficient, to have these men traversing each other's paths when one man could carry on all the work to be done in a given area.

Let the sanitary personnel be made up of generalists rather than specialists, of instructors rather than enforcers, of aids to public health rather than hindrances. With such a personnel another field of public health will be brought to a higher efficiency, and the result will be a strengthening of the entire chain of public health by making stronger its weakest link.

THE PRESENT STATUS OF HEALTH EDUCATION, PHYSICAL EDUCATION AND SCHOOL MEDICAL INSPECTION

A Brief Report From the Committee on Health Problems in Education of the Child Hygiene Section of the American Public Health Association

Prepared in Conjunction with the Research Division of the American Child Health Association.

AT THE Annual Meeting of the American Public Health Association in 1922, a resolution was passed asking for a committee report upon "the progress already made toward adequate health teaching in the schools; upon legislation bearing upon this subject; upon textbooks now used or recommended by the committee for school use; upon outlines for such courses on health as have already been prepared and put into use." The task of preparing such a report was referred to this committee of the Child Hygiene Section, which was then under the chairmanship of Professor C. E. Turner.

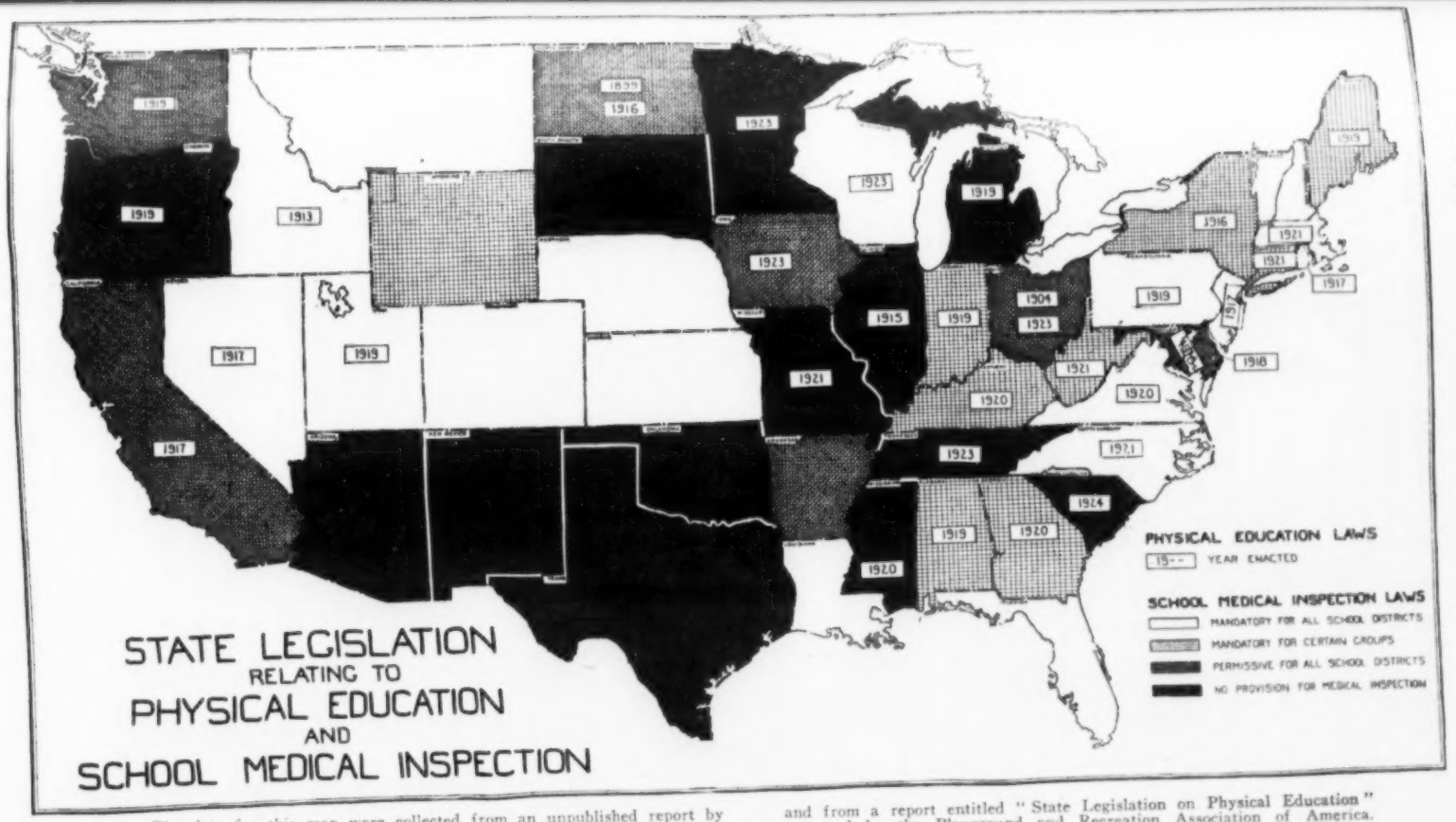
Realizing at that time that the Research Division of the American Child Health Association is a source from which the public health profession may hope to secure such data, and that this study might be made a part of its more extensive investigations, the Chairman presented the needs of the committee to the Head of the Research Division, Dr. George T. Palmer. It was recognized that these data would be useful to both associations, and arrangements were made for the two Associations to coöperate in the study. The committee was assisted in the preparation of its report by a member of Dr. Palmer's staff, Emily C. Seaman, Ph.D., and to her is due the chief credit for assembling the data which are here presented.

This report presents facts, but it does not attempt to present a critical and comparative evaluation of the work done in different states or different cities. Furthermore, it should be recognized that it is a *brief* report. It does not even attempt an appraisal of the relative merits of the various printed courses of study. Though not comprehensive, it is hoped that it may prove useful and that it may serve as a preliminary step toward a more exhaustive study of the status of Health Education.

I. HEALTH TEACHING IN SCHOOLS

All states require the teaching of hygiene and physiology. A few states specify a minimum time requirement. Others emphasize the teaching of hygiene, giving it by implication a broad interpretation, or they indicate the need for a comprehensive health program in their laws relating to physical education. The committee does not attempt to present standards by which the adequacy of health teaching may be determined. It is recognized, however, that information in physiology and hygiene alone is not adequate health teaching, and the progressive school systems of today are making rapid strides in developing not merely instruction but also *a training program, which will give the child correct habits and attitudes* as well as adequate knowledge. This is not a thing which can be legislated into existence. The school system which is working under the best law does not necessarily have the best health education program. Each state has all the law necessary for the development of an ideal program.

It will be more significant, therefore, for us to discuss here the programs of study which have been prepared in various states than for us to discuss legislation upon this point. It should be borne in mind, however, that the preparation of an adequate printed program of health education does not *necessarily* guarantee



The data for this map were collected from an unpublished report by Dr. Harold H. Mitchell on "The Status of School Medical Inspection" and from a report entitled "State Legislation on Physical Education" prepared by the Playground and Recreation Association of America.

that the program is put into operation. On the other hand, many school systems which have not printed their programs are doing work of excellent or outstanding quality.

Excellent health training in the field of nutrition has been developed in several states through supervisors of nutrition in state departments of education or of health, or through extension agents in connection with home economics departments of state universities. The nutrition program, like the program of physical activities, is an important part of adequate school health work. Some of these programs are doubtless available in printed form and a discussion of them should have been given as important consideration in this report as the subject of physical education; but it has not been possible for the committee to gather the necessary data for presentation at this time.

The courses of study now in print are described under Section III.

II. PHYSICAL EDUCATION

The accompanying map indicates the status of legislation regarding physical education and school medical inspection in every state in the Union. It shows that thirty-three states now have physical education laws, and gives the date when each law was enacted.

There is a director or supervisor of physical education in Nevada, California, Connecticut, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, Virginia, Washington, and West Virginia. The state of Minnesota has a superintendent of physical education and health education. The states of Utah and Pennsylvania each have a superintendent of health education.

The states which have a syllabus covering health education, physical education, or both, are listed in Section III of this report, and each syllabus is briefly described.

The legislation of California, Delaware, Indiana, New Jersey, Rhode Island and Washington requires that the state board of education shall prescribe the course in physical education.

The statute in Maine specifies that the course should make provision for instruction in personal hygiene, community sanitation and physical education.

The statute in Massachusetts reads that the school committee may include as part of the school course, calisthenics, gymnastics and military drill, but that no special instructor shall be employed therefor except by a two-thirds vote of the committee.

Nevada requires that four-year high schools shall offer physical training and employ special teachers.

North Dakota requires that institutions receiving state money make provision for daily instruction in physical exercise and adopt progressive methods of physical exercise for the development, health and discipline of pupils.

The states of Arizona, Arkansas, New Hampshire, New Mexico, Kansas, Louisiana, Montana, Nebraska, Colorado, Florida, Oklahoma, South Dakota, Texas, Vermont and Wyoming, have no laws mandatory or permissive regarding physical training.

Louisiana has a state director of physical training in the State Department of Education, but does not have any state legislation on physical education.

Utah has state legislation for health education. A committee to provide and recommend plans for carrying this provision into effect consists of the State Director of Health Education, the Dean of the State School of Education, the Dean of the Department of Medicine of the University of Utah, the Secretary of the State Board of Health and the Director of the Department of Home Economics of the Agricultural College.

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III. STATE MANUALS OR SYLLABI

The manuals or syllabi published by state boards of education or state boards of health have been classified as: *A*—Outlines for physical education—hygiene not included. *B*—Outlines for hygiene and development of health habits—physical education not included. *C*—Outlines including both physical education and hygiene. These syllabi could be used as a basis for a correlated health education program.

The classification of the manuals is indicated under the name of the state.

ALABAMA. *Manual on Physical Education.*
B 266 pp. with bibliography. Part II—23 pp. devoted to health activities, health inspection, and general physical examinations; instruction on recognition of contagious diseases and physical disorders. Endorsement of "Modern Health Crusade."

CALIFORNIA. *Manual Physical Education for*
A Public Schools. 182 pp. Suggestions for superintendents, principals and directors on executive or administrative organization of physical education. Contains syllabus on physical training activities, games, dances, athletic activities.

DISTRICT OF COLUMBIA. *Graded Course in*
B Health Training and Instruction. Elementary and Junior High Schools. 96 pp. Outlines essentials in health program. Suggestions on methods and subject matter to be taught from kindergarten through junior high school in health habits and simple physiology. Suggestions for medical inspection, school hygiene, etc. References and short bibliography.

GEORGIA. *Health Manual.* 50 pp. Require-
C ments for physical examinations and outlines for elementary work in hygiene and formal and informal gymnastics.

MAINE. *Program of Physical Education.* 3
B pp. Brief outlines and requirements (more complete manual in preparation). Endorsement of "Health Crusade" medical inspection for sight and hearing recommended but not compulsory.

MASSACHUSETTS. *Physical Education in Pub-*
A lic Schools. 102 pp. Manual for teachers in elementary and junior high schools. Tactics, gymnastics, dances, games. Reference book and short bibliography.

Physical Education in Public Schools. 62 pp. Manual for teachers in junior and senior high schools. Outlines for track and field work, efficiency tests, etc. Bibliography 2 pp.

MICHIGAN. *Course of Study in Health In-*
B struction.
Course of Study in Hygiene, 3rd, 4th, 5th and 6th grades.

MISSOURI. *Manual for Physical Training in*
B Elementary Schools. 20 pp. Suggestions and recommendations for organized play rather than formal gymnastics. Reference for teachers.

NEVADA. No outline for elementary schools.
A Teachers are referred to syllabi on physical training from states of New York and New Jersey.
Outline for Physical Training in High School. Part of General Course of Study. 4 pp. Syllabus of physical training of Lansing, Mich. recommended. References recommended for teacher.

NEW JERSEY. *Physical Training Bulletin for*
C Rural Schools. 77 pp. Outlines for grades and suggestions for games, corrective exercises, dances, songs, etc.
Minimum Essentials in Health and Physical Training. To be taught in schools without special teachers of physical training. 78 pp. Promote development of health habits through self-activity and in being healthy rather than becoming so. Correlation between health education and habit formation. Suggestions for plays, games, tests and competition for kindergarten through the 6th grade. Outlines for each month.
Preliminary Health Bulletin. 55 pp. Suggestions for hygiene of classroom, psychology of health teaching, habit formation, coöperation with parents and with medical examination. Summary of various systems used in teaching health in New Jersey. From 1st through 8th grade.

NEW YORK. *Health Education Syllabus in*
B Hygiene. 135 pp. Detailed outline for lessons in hygiene from kindergarten through 6th grade. Suggestions for devices, health clubs, etc. Short bibliography.

A State Syllabus in Physical Education. 3 vol. Book 1—Rural and Ungraded Schools. 133 pp. Book 2—Elementary Schools. 283 pp. Book 3—Secondary

Schools. 134 pp. Outlines for physical education correlated with health examination or medical inspection and daily health and sanitary inspection by the class teacher. Dances, drills, athletics, stunts, games.

NORTH DAKOTA. *Course of Study in Physi-*
C *ology and Hygiene for Elementary Schools.* 89 pp. Detailed outlines for lessons in personal and community hygiene. Physical education is correlated with hygiene. Includes Syllabus of Physical Education in High Schools. 26 pp. The physical education is correlated with medical inspection, malnutrition, and health teaching. Suggestions for marching tactics, dancing steps, games, etc.

OHIO. *Course of Study in Hygiene.* 282 pp.
B (Prepared by Ohio Public Health Association and published by Department of Education.) Suggestions for lessons in hygiene and nutrition, setting-up exercises, chores, games, plays, etc., as well as lessons on informational material. Comprehensive outline.

OREGON. *Course in Physical Education in*
A *Schools of Oregon.* 118 pp. Outline for gymnastics, big muscle activities, games, dances, outdoor activities, etc., for elementary and high schools. Bibliography. 2 pp.

PENNSYLVANIA. *Course of Study in School*
A *Health.* Physical Education, Grades 1-8. Physical Education, Grades 9-12.
B Physiology and Hygiene, Grades 1-8. Physiology and Hygiene, Grades 9-12.

TENNESSEE. *Manual of Physical Education.*
A 39 pp. Suggestions for tests, games and gymnastics. References and bibliography.

UTAH. Six sets of leaflets giving outlines of
B lessons in health education from 1st grade through 6th grade. Suggestions for lessons on safety, health habits, hygiene, sanitation, physical exercise, information on contagious diseases and development of proper mental attitudes. Suggestions for devices and books for reference.

VERMONT. No special syllabus for physical
B education or hygiene; part of the general course of study for rural and elementary schools is given to physiology and hygiene. Vigorous recommendations for the correlation of medical inspection and the development of an interest in health. Course comprises a comprehensive outline for grades in personal and community hygiene and physical education as well as the development of health habits. Scoring for habits and personal fitness recommended, "Health Crusade" advocated.

VIRGINIA. *State Course of Study* for Rural
B and Elementary Schools of Virginia. Section on "Health group" and hygiene. 13 pp. Section on physical education. 11 pp. Close correlation between physical examination, hygiene and physical education. Special emphasis placed on importance of having physical training a "health" project. Weighing and measuring children every month recommended. Teachers required to conduct physical examination in accordance with terms furnished by superintendent's office. These tests must not be confused with medical diagnosis. Teachers required to use *Health Manual for Teachers,* 87 pp., brought out by State Department of Health. This manual outlines instruction in healthfulness of environment and control of preventable diseases, physical education and development of the child's body for growth and resistance to disease, and health education for children and teacher.

WEST VIRGINIA. *Manual of Physical Educa-*
A *tion.* 135 pp. Outline for physical activities, games, contests. Short bibliography.

WYOMING. *Physical Education in Rural*
A *Schools.* 31 pp. Suggestions for daily program in physical training, dancing, plays and games. Outlines for personal hygiene. Recipes for hot lunches.

IV. COURSES OF STUDY FROM SELECTED CITIES

The following cities have printed syllabi which, it is thought, may be suggestive and helpful in developing a coördinated health program for the elementary and high schools. These are contributions from departments of public instruction, and each syllabus furnishes a different approach to the subject. The syllabi from the cities have been classified in the same manner as those of the various states, with the addition of one other group, viz: *D*—Syllabi in special subjects which have a background of science applied to health education.

No evaluation of work done in health education is implied by the selection of these cities. Many other cities furnish excellent manuals, and some cities in which noteworthy health education work is to be found have not printed syllabi. The material from Oakland is particularly interesting because of the correlation of health education with nature study, science and home economics. Some excellent material on health education has been published by private health agencies, but this has been omitted from this survey because of the limited space.

CITIES

BINGHAMTON. A survey of the methods used C in a *Health Education* program. 87 pp. Introduction on the organization of a school health education program: Medical inspection, setting-up drills, instruction in hygiene and nutrition; organized, supervised recreation and athletics; gymnastic drills, exceptional child study. Definite suggestions are given for correlation of work of medical inspector, school nurse and classroom teacher. Nutrition is made a subdivision of hygiene and placed as a special school project. No subject matter is suggested or special outlines given for the grades. The manual is composed principally of methods of procedure and objectives to be attained.

DETROIT. *Course of Study in Health Instruc-* B *tion.* Board of Education Syllabus. 176 pp. Contents: Organization of School Health Programs; Definite Measures of Health Teaching; teaching outline, standards of attainment and bibliography for the following subjects; normal growth, decreased illness, physical defects, safety education, physical ability, energy and vitality, leisure time, qualities of mind; chapters on scrap books, posters and plays, health problems, health clubs, health programs; summary of health laws relating to food, rest, air, exercise, clothing, posture. Syllabus not divided into grades. Charts and methods given.

LOUISVILLE. *Health Plays, Games and Assem-* C *blies* by Louisville School Children, State Board of Health of Kentucky. 242 pp. kindergarten through 8th grade. Subjects: Good nutrition, good health habits, milk, health clubs, clothing, care of teeth, posture, safety and first aid posters, sanitation. Outlines for subject matter and methods. Correlation between physical activity, development of good health habits, personal hygiene and civic responsibility.

TRENTON. *Elementary Course of Study in* C *Hygiene,* Public Schools, Trenton, New Jersey. 82 pp. From Kindergarten through 6th grade.

Physical Education. 35 pp. Outlines for each grade.

Hygiene. 45 pp.

Supplementary report of committee on above course of study in hygiene. 18 pp. Additional bibliography.

SANTA FE. *Course of Study, Vocational* D *Home Economics.* State Board of Vocational Education. 111 pp. Contents: Food Study; Personal Hygiene; Clothing and Textiles, Sanitation and House Care; Physiology and Hygiene; General Science Applied to the Home; Home Nursing and Child Care; Home Management; Advanced Foods and Dietetics. Outline may be used as basis for developing health education program.

OAKLAND. (I) *Physical Education, grades 1* A *and 2.* 18 pp. Outline of games, etc.

Physical Education, grades 3 and 4. 20 pp. Outline of physical activities, games, etc.

Physical Education, grades 5 and 6. 34 pp. Outline for physical activities, posture training, special games.

Physical Education for Junior High Schools, grades 7 to 9. 72 pp. Outline for physical activities. To be correlated with Health Education.

(II) *Health Education Kindergarten* C *through 4th grade.* 13 pp. Correlation of hygiene and physical education with language, dramatics, geography, art. Correlation of medical inspection with nutrition and health program. Suggestions for methods and subject matter. Standards of attainment in proper health habits. Not outlined for various grades.

Health Education, grades 5 and 6. 18 pp. Correlation of health education with hygiene, physical education and language, drawing and home economics. Informational material directly related to health. Physiology and hygiene applied to healthful living and environment. General

method prescribed is the approach to health teaching through interests of child; *e.g.*, importance of cleanliness and proper feeding of pets, discussion of various food habits of animals, etc.; stories of heroes; development of individual responsibility through health clubs. Syllabus particularly rich in suggestions of methods and subject matter which may be correlated. (III) *Science for grades 7, 8 and 9.* 94 pp.

D Outline for each grade. Relation of progress of science to changed living conditions. Excellent suggestions for developing interest in health through applied science and nature study. Admirable correlation of subject matter.

SEATTLE. *Hygiene and Physical Education.* *C* 230 pp. Outlines for grades 1 to 8. Correlation of physical education, hygiene, sanitation. Coördination with other studies; *e.g.*, literature, art, plays, games, etc.

V. LAWS RELATING TO MEDICAL INSPECTION

The map on page 869 presents data regarding school medical inspection laws and indicates the source which should be credited for the data on this subject.

In 1915 only twenty-six states had legislation relative to school health supervision. Since that time legislation has increased and many laws have been revised and improved. At present thirty-five states have legislation for school medical inspection, either mandatory or permissive. Recent legislation shows distinct progress from a more or less related medical inspection toward more comprehensive school health supervision.

The map indicates clearly (1) those states in which the law is mandatory for all school districts, (2) those states for which the law is permissive for all school districts, and (3) those states in which there is no provision for medical inspection.

Further explanation of the laws mandatory for certain groups (*i.e.* laws which apply only to certain school systems) is provided according to states as follows:

Alabama—Mandatory certain group, permissive for others.

Connecticut—Mandatory in cities over 10,000. Permissive in others.

Georgia—Mandatory where districts have commissioner of health.

Indiana—Mandatory for cities over 100,000. Permissive for others.

Kansas—Mandatory for dental inspection. Permissive for physicians inspection.

Kentucky—Mandatory in counties having full-time health department.

Maine—Mandatory in cities over 40,000.

New York—Mandatory for all except first class cities. These left to provide their own system.

West Virginia—Mandatory for independent school districts. Permissive for others.

Wyoming—Mandatory for incorporated towns.

It is also interesting to note that it is specified in California, Louisiana, Maine, Nebraska, Nevada, North Carolina, Rhode Island, Utah, Vermont and Virginia, that the examination is to be made by teachers.

The West Law in Virginia specifies that the teacher must have had a course of study which includes instruction in making a health inspection of children in order to receive her teaching certificate. The state of Arizona has a law requiring the examination of teachers for tuberculosis.

VI. SUPPLEMENTARY LIST OF PUBLICATIONS

There has been prepared as a supplement to the list of manuals and syllabi in Section II the following list of the publications of state boards of education and state boards of health. The list includes only the pamphlets which seem to be directly related to health education and adapted for use in the schools. Such subjects as legislation, control of communicable diseases, infant welfare and sanitary engineering are omitted.

The publications of the health departments in each state are prefixed with the letter (H), and those of the departments of education with the letter (E).

ARIZONA.—(H) What Do Growing Children Need? School Teacher and Sex Education. Sex Education in Home and High School.

ARKANSAS.—(H) A Guide, Special Bulletin No. 3.

CALIFORNIA.—(H) Care of the Teeth, Special Series published by Oakland Department of Health.

ILLINOIS.—(H) Suggestions on Teaching Public Health in High School Biology Courses.

INDIANA.—(H) What is Malnutrition? Care of the Teeth.

IOWA—(H) Publications of State College of Agriculture.

KANSAS.—(E) Health Program in the Kansas City Schools, 1919-21. (H) Leaflets—To Awaken Interest in Health—Kansas Mother's Manual, Use More Milk (Agric. Coll.), Sex Education in Schools, What Do Growing Children Need?

KENTUCKY.—(E) High School Course in Hygiene, Home Nursing and First Aid for Vocational Home Economics.

LOUISIANA.—(E) The School Lunch, Nutrition Project—Home Economics Division (Baton Rouge). (H) Health on Wheels.

MAINE—(E) The Noon Hour and the Noon Luncheon, Vocational Education in Maine. (H) Leaflets. Health of Home and School.

MASSACHUSETTS.—(E) Physical Proficiency Test and State-Wide Competition for the Elementary and Junior High Schools. (H) Health Education, The Place of Nutrition in the School Program, Health Habits, A Health Creed, The School Lunch, Food and Its Relation to Weight and Height, The Story of Digestion; Food: What It Is and What It Does; Illustrated Lectures and Motion Pictures on Health Topics, Twelve Rules for Healthful Living, Suggested Programs on Health, A Vital Message to Young Girls, School Health Program, Procedure for Tooth Brush Drill, Eating for Teeth, Diphtheria Bulletin.

MICHIGAN.—(H) Public Health Manual for Teachers, Protecting Michigan's Health, Public Health Bulletin, Little Mothers League.

MINNESOTA.—(H) Message to Girls, For Little Mothers.

MISSOURI.—(H) Nutrition Instructions for School Children.

NEW JERSEY.—(E) Good Health Number of the Education Bulletin, March, 1922.

NEW MEXICO.—(E) Course of Study, Vocational Home Economics. (H) Bulletins Coll. of Agri.

NEW YORK.—(E) Course of Study and Syllabus in Hygiene in the Elementary Schools of N. Y. C., Course of Study and Syllabus in Cooking, Bulletins of University of State of N. Y., Rural School Lunches. (H) Bulletins State Agri. Coll., Milk and Its Relation to Public Health.

NORTH CAROLINA.—(H) How a Girl Can Guard Her Health, Care of Teeth.

OHIO.—(E) Official Daily Bulletin, April 4, 1923, Eating and Foods, Sleep and Rest, Fresh Air, Sedentary Habits, Make It a Habit to Take Some Breathing Exercise Each Day, Blow Your Nose Gently, Exercises for Weak Feet, Do You Breathe Deeply? Constipation, Stretch Your Neck, Bathing, Are Your Teeth Clean? Eye Strain, Your Feet, Help Us to Help You, To Avoid "Colds," Health First—Relax—Be Careful, Student Health During Month of December, 1922, Ohio State University Student Health Service.

PENNSYLVANIA.—(H) The Listening Post.

SOUTH DAKOTA.—(E) The Hot Lunch. (H) Health Poster, Vital Things in a School Health Program.

TENNESSEE.—(H) Health Score.

TEXAS.—(E) Food Study Outlines for Texas High Schools, Home Nursing for Texas High Schools, Home Economics, Texas High Schools, Vocational Home Economics in Rural and Small High Schools in Texas, Plans for Girls' Clothing Contest, Texas High Schools. (H) Game of Health, Care of Teeth, Health Hints and Jolly Jingles.

UTAH.—(H) Instructing Your Child in the Facts of Sex.

VERMONT.—(H) Health Manual for Teacher.

VIRGINIA.—(H) Child Welfare—Conference Number, Underwieght in Children, Sex Education in the Home, Sex Education in Schools, Health Catechism (for Older Children), The Teacher and the State Board of Health, Health Manual for Teachers, Health Catechism (for Little Children).

WASHINGTON.—(H) First Biennial Report of the State Dept. of Health.

WISCONSIN.—(H) Place of Sex Education in Biology and General Science—Bulletins Agri. Exp. Stations.

VII. BIBLIOGRAPHY

In addition to the material published by cities and states, pamphlets, reference

books, textbooks, and health education material are available from other sources*.

A. Recent Publications Dealing With the General Problem of Health Education and the School Health Program

Health Education—A Program for Public Schools and Teacher Training Institutions. 1924. 161 pages. Single copy 50c. Contains also valuable bibliographies and lists of references. This and other reports of the Joint Committee on Health Problems in Education are available from Dr. Thomas D. Wood, 525 West 120th St., New York City.

Health Education and the Preparation of Teachers. Report of Lake Mohonk Conference. 1922. American Child Health Association, New York City. 183 pages. 50c.

Health for School Children—A Report of the Advisory Committee of the National Child Health Council. Bureau of Education, Washington, D. C. 75 pages. Single copy 10c.

Report of the Committee on School Health Program. American Journal of Public Health, Vol. XII, p. 207, March, 1922.

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Report of the Health Education Conference held at the Massachusetts Institute of Technology, June, 1924. To be published by the American Child Health Association.

B. Reference Books for Teachers in Elementary Schools

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Amer. Red Cross. *Textbook on First Aid,* Amer. R. C.
Andress. *Health Education in Rural Schools,* Mifflin.
Andress. *Teaching Hygiene in the Grades,* Mifflin.
Bancroft. *The Posture of School Children,* Macmillan.
Bonser. *The Elementary School Curriculum,* Macmillan.
Coleman. *The People's Health,* Macmillan.
Dansdill. *Health Training in Schools,* Nat. Tub. Asso.
Elsom & Trilling. *Social Games and Group Dances,* Lippincott.
Goldthwait. *Body Mechanics,* Mifflin.
Harrison. *Textbook of Home Nursing,* Macmillan.
Hoag. *The Health Index of Children,* Weber.
Holt. *Food, Health and Growth,* Macmillan.
Hunt, Johnson & Lincoln. *Health Education and the Nutrition Class,* Dutton.
Keene. *Manual in Physical Training,* World Bk. Co.
Lowry. *Teaching Sex Hygiene in Public Schools,* Forbes.
Ogden. *Rural Hygiene,* Macmillan.
Payne. *Education in Health,* Lyons.
Stecher. *Games and Dances,* McVey.
Walsh. *Yours for Sleep,* Dutton.
Walters. *The Principles of Health Control,* Heath.
Winship. *Danger Signals for Teachers,* Forbes.
Wood. *Foods of the Foreign Born,* Barrows.

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Health Education Publications—Amer. Child Health Asso., New York City.
Health Education Publications—Nat. Tub. Asso., New York City.
Posters—Nat. Child Welfare Asso., New York City.

C. Textbooks for the Elementary Schools

Cobb. *Graded Outlines in Hygiene,* Wo ld Bk. Co.
Conn & Holt. *Physiology and Health Books,* Silver Burdett.
Cuzzort & Trask. *Cuzzort-Trask Health Series,* Heath.
Davison. *Health Lessons,* Amer. Bk. Co.
Emerson & Betts. *Hygiene and Health Series,* Bobbs.
Gregg. *Hygiene by Experiment,* World Bk. Co.
Hallock & Winslow. *The Land of Health,* Merrill.
Hartman-Bibb. *First Book of Health,* World Bk. Co.
Haviland. *Haviland Health Series,* Lippincott.
Hutchinson. *Woods Hutchinson Health Series,* Mifflin.
Lansing-Gulick. *Food and Health,* Ginn.
Lippitt. *Personal Hygiene and Home Nursing,* World Bk. Co.
O'Shea and Kellogg. *Everyday Health Series,* Macmillan.
Overton. *Health Series,* Amer. Bk. Co.
Payne. *Education in Accident Prevention,* Lyons.
Ritchie & Caldwell. *Hygiene Series,* World Bk. Co.
Turner. *Health,* Heath.
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D. Supplementary Readers for the Elementary Schools

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Andress. *Boys and Girls of Wake-Up Town,* Ginn.
Andress. *A Journey to Health Land,* Ginn.
Bailey. *Sure Pop and the Safety Scouts,* World Bk. Co.
Booth and Carter. *Mary Gay Stories,* World Bk. Co.
Broadhurst. *All Through the Day the Mother Goose Way,* Lippincott.
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THE GENERAL PRACTITIONER AND PREVENTIVE MEDICINE

The attitude of the general practitioner toward preventive medicine has often been the subject of discussion and occasionally, but fortunately very seldom, there are indications of a certain amount of unrest on the part of practitioners over what they regard as the encroachments of preventive medicine. Although prevention has been preached and practiced for many centuries, modern preventive medicine had its birth almost entirely with the advent of bacteriology; and since the time of Pasteur, the science has made tremendous strides. Diseases, the causes of which were not known, and the prevention of which was in chaos, are now absolutely under our control. It is the glory of the medical profession that its members have always stood, not only for the alleviation of suffering, but for the prevention of disease.

The general practitioner is taught to cure disease and to recognize it when he finds it, or rather when a patient falls ill and feels the necessity of consulting him. Theoretically at least, the more illness there is, the more the practitioner thrives, and conversely, the less disease there is, the smaller the income of the practitioner. The demand of the public is to be relieved of its suffering and to be cured of its ailments. The physician believes that his income depends upon the amount of illness. He is paid by those who are ill or who have just been ill, which means that a patient has to pay at the time when he can least afford to do so. The Chinese method is said to be that you pay while you are well and receive when you are sick. In other words, the physician receives his fee for maintaining the health of his clients, and during illness gives his service free of charge. This state of affairs has been imitated to a certain extent by the Medical Insurance Act in England, and by certain fraternal and commercial bodies elsewhere, where the physician is employed by the year and where his income usually

depends upon the number of clients enrolled. The less illness among those who have subscribed, the less work the physician has to do, consequently it is to his advantage to keep them well as far as possible. Frankly, we doubt that these considerations have influenced many men either in this or other countries, but theoretically they must present themselves to us.

If bacteriology has shown anything clearly, it is that every case of contagious disease which is cured wipes out a focus of infection and lessens the danger from this particular infection to all around. There are other diseases, some not contagious, in which early treatment and early cure also mean prevention; for example, the early treatment of Bright's disease, the cure of a running ear in a child, the removal of adenoids to prevent deafness, the use of nitrate of silver to prevent blindness, or the proper fitting of glasses for the correction of abnormalities of the eye. Every man who treats a case of typhoid fever and disinfects the discharges from his patient, is practicing preventive medicine. The same is true of venereal diseases or diphtheria and any other of the communicable diseases.

The point upon which most general practitioners stick is the encroachment of public medicine upon private practice. Certain things are accepted largely because we have grown used to them,—for example, free vaccination and free Schick tests, etc. At what point is it justifiable for the public authorities to step in and take complete charge of a case? It is universally agreed that the pauper and the indigent may receive treatment at the public's expense and there is no objection to this, probably because the private physician cannot obtain fees from such persons.

The physician is often called upon to treat cases of pneumonia, tuberculosis, rickets, and other diseases which are brought about or aggravated largely by the surroundings in which the patient lives. Under such conditions, the treatment is at best palliative and often disappointing. In such cases he rightly calls upon the authorities to abate the smoke nuisance, to relieve overcrowding, to remove saloons, and such other things. This is recognition at once of the tremendous sociological side of medicine as well as of the interest which the public must of necessity have in every case of illness.

There has been a marked and a growing recognition of the interdependence of each part of the body on every part in order that the body may be well and function well as a whole. The recognition of these facts has brought into the prevention of disease the questions of physical training and education, including medical inspection of schools and the early correction of defects of every sort, in view of their ultimate effect on physical and mental well being. Oliver Wendell Holmes once said "A healthy cobbler is a better man that a sick king."

These considerations, which we have barely mentioned, and many others of like nature which might be mentioned, indicate the wide scope of preventive medicine and the wide training which every physician should have in his preparation for practice. Though preventive medicine is practiced as a separate profession, and though trained men and women are engaged in this kind of work, we can never get away from the assistance given by the general practitioner, nor should we wish to do so. Our medical schools must teach hygiene and preventive medicine more and more, and teach them in an attractive manner. There will never be a time when the services of the conscientious and well-trained physician will not be in demand, even if our most Utopian outlook for the future of prevention is realized. Indeed, as the public health campaign more and more stresses the value of early diagnosis, the physician himself will become one of the chief agents of prevention.

PUBLIC HEALTH WORK PAYS

When health officers or other sanitarians bring forward figures to show the efficiency of their work, objections are often raised, the claim being made that other factors than the measures adopted have been instrumental in bringing about the result. Unquestionably there is some truth in these objections, and it must be admitted that public health workers sometimes strain a point to their advantage. To a certain extent this is justifiable when we remember that appropriations for future work depend largely upon success and good reports.

We have been told *ad nauseam* by the antivivisectionists and antivaccinationists that the incidence of smallpox has been reduced by general conditions and by improvements in hygiene rather than by vaccination. All of this has been often and conclusively refuted; so it is not necessary to repeat for our readers the arguments. Similar arguments have been brought forward for almost every improvement which has been chronicled in the health of the public.

We have often been told that the decrease in tuberculosis has been due to better living conditions and to other influences, rather than to the strenuous campaign against the disease which has been carried on especially since the discovery of the bacillus. It is true that enormous sums of money have been spent in the antituberculosis campaign, and even those of us who believe most in the efficiency of this work have felt the wisdom of taking stock and of satisfying ourselves that money was being spent to advantage. Doubtless there are instances in which money has not been spent wisely, but on the whole, the reduction in the death rate in every country in which work has been going on, speaks conclusively for the wisdom of the measures adopted. Taking England as an example, it is well known that the fall in the mortality from tuberculosis began about 1870, twelve years before the discovery of the germ, and more than twelve years before the modern campaign began. The general mortality in all countries has been declining steadily until it has reached a point not believed possible by sanitarians less than twenty years ago.

This entire question was ably discussed in August last at the Congress of the International Union Against Tuberculosis. Sir Robert Philip, the well-known authority on tuberculosis, reviewed the evidence in an able and convincing manner. He showed that the decline in general mortality is uniform in rate, whereas the decline in the death rate of tuberculosis shows a much sharper fall. In Scotland the death rate from all diseases has fallen less than 50 per cent during the years 1871 to 1921, whereas the death rate from tuberculosis for the same period shows a fall exceeding 66 per cent. The drop in tuberculosis mortality is most conspicuous in the early periods of life, and the productive period of those who eventually die from tuberculosis, as shown by the statistics of the Metropolitan Life Insurance Company, is prolonged.

In Denmark, the results are particularly striking. In that country the antituberculosis campaign has been especially well organized and more liberally supported by the state than in any other country. The death rate is the lowest in Europe, being 9.5 per 10,000. Up to the age of fourteen, the mortality has fallen since 1890 more than 70 per cent. In every respect, Denmark gives a striking example of what can be accomplished by a well organized campaign.

The question of increase of immunity was also discussed, and, contrary to the opinion held by some others, Sir Robert Philip did not support it. The great resistance of the Jews, the oldest community dwellers in the world, as contrasted with the peculiar susceptibility of the newer races, such as the Negro and the

Indian, has convinced many people that this increasing immunity was a factor in lessening the tuberculosis death rate. It has been a star of hope, and certainly what we know about bacteriology and immunity in general leads us to believe that immunity against prevalent diseases always shows a progressive increase. It is hard, therefore, to give up this idea, though it does not entirely explain some of the other facts known about tuberculosis in various parts of the world, and unquestionably other factors play a part.

The outstanding fact is that the antituberculosis campaign is worth while, and that it has produced results commensurate with, and in proportion to, the money expended. It emphasizes the well-known slogan, "Public Health is Purchasable." It shows that a community and a country can buy public health according to the money which it is willing or able to spend. It shows that a stationary or an increased death rate is due to local conditions which may generally be found in the apathy or the ignorance of its inhabitants. This is our justification for a campaign of education.

To the health officers and public health workers, the study is distinctly heartening and furnishes the ground on which we can, with confidence, appeal to the public for moral and pecuniary support.

WHEN DOCTORS DISAGREE

When the archeologist of the future exhumes the records of the early twentieth century he will be amazed at the variety of official and accepted procedures employed for the control of disease and the promotion of health. The report of the Committee on Communicable Diseases of the Conference of State and Provincial Health Authorities, published in this issue, will be illuminating to him. It will give little help to present day sanitarians, for any one consulting this report in the hope of determining a standard practice will be disappointed. The states and provinces have a wide variety of procedures for handling similar problems, and a like report for cities would doubtless show an even greater variation. The report will perhaps also give our future historian of public health some insight into the necessity at this time for the adoption of a proposal such as that outlined by the Field Director of the Committee on Municipal Health Department Practice of the Association.*

The laws of disease are not statutory laws; yet laws for the control of disease are on the statute books of all states and cities, and the varied man-made laws show a sublime disregard for the uniformity of nature's laws. Fumigation, for instance, with ample evidence of its uselessness, is still provided for by law in many places. The diversity of methods for handling diphtheria carriers is striking. The carrier presents admittedly a difficult problem; but eighteen different regulations in forty-two different places hardly seem necessary, and it is reasonable to suppose that group judgment might determine which were the four of five best ways, and the public health profession might concentrate on securing the universal adoption of the best procedures.

The present diversity of public health practice, confusing enough to the public health worker, leaves the public utterly at sea in trying to understand our teachings. Before communication and travel became so easy, those directing public affairs had little opportunity to inform themselves of advances made outside of their own

* See "The Fly in the Ointment" by W. S. Rankin, M.D., in this issue.

communities; their own judgment was as good as the next man's, and the people whom they were serving, similarly isolated, were in no position to discriminate. Now there is no excuse for public officials not being informed, and the people themselves, seeing the obvious disagreement among the doctors, are beginning to question many measures claimed to be undertaken for their welfare.

Universal standardization is undemocratic and leads to stagnation, but the public health group itself might well get together at this time, and within certain limits establish as standard such practice as seemed to be wise in the judgment of the group. There still could be left enough latitude for the investigation and testing of new methods.

LIST OF MEMBERS

Proposed for election to the A. P. H. A. July 31 to August 30, inclusive.
Names of New Members are set in Light Face Type.
Names of Sponsors are set in **Bold Face** Type.

ALABAMA

Margaret K. Stack, R.N., Hartford, Conn.
Elizabeth La Forge, R.N., Director Bureau of Child Hygiene, Birmingham, Ala.

CALIFORNIA

Homer N. Calver, New York, N. Y.
Mrs. Nora L. Purviance, R.N., Richmond, Calif., Dir. Richmond Health Center.

COLORADO

Professor John Sundwall, Ann Arbor, Mich.
Ann Dickie Boyd, B.A., R.N., Denver, Colo., Supervisor of Nurses Denver Public Schools.

George J. Turre, Denver, Colo.
Dana E. Kepner, S.E., Denver, Colo., Sanitary Engineer State Board of Health.

GEORGIA

W. A. Davis, M.D., Atlanta, Ga.
Anne L. Gallagher, R.N., Atlanta, Ga., Supervisor, Public Health Nurses, Georgia State Board of Health.

ILLINOIS

Maximo M. de Ocampo, B.Sc., Chicago, Ill.
Frederick Wm. Buckland, Chicago, Ill., Asst. Laboratory Technician Presbyterian Hospital.

Professor John Sundwall, Ann Arbor Mich.
Effie S. Andrus, R.N., Mt. Carmel, Ill., Red Cross Public Health Nurse.
Mrs. Edna G. Williams, Pittsfield, Ill., County Nurse.

IOWA

Edward G. Huber, M.D., Boston, Mass. M.P.H.
Walter J. Connell, M.D., B.S., Dubuque, Iowa, Asst. Health Director City and County Health Dept.

Zelma Zentmire, B.S., Iowa City, Iowa.
Mabel E. Sucher, Mason City, Iowa, City Bacteriologist.

MAINE

Russ W. Harding, M.D., Franklin, Mass.
Ruth C. Sturtevant, York Village, Maine, Health Officer, York, Me.

MASSACHUSETTS

H. E. Berger, Jr., Wellesley Hills, Mass.
Robert N. McClellan, Auburndale, Mass., Asst. Director Coöperating Boards of Health.

MICHIGAN

Professor John Sundwall, Ann Arbor, Mich.
Anna M. Lee, Ann Arbor, Mich., Public Health Course, Univ. of Michigan.
Pearl A. Hough, R.N., Battle Creek, Mich., Public Health Course, Univ. of Mich.

NEW YORK

Professor John Sundwall, Ann Arbor, Mich.
Bertha B. Berry, R.N., Cortland, New York, City Public Health Nurse.
John A. Conway, M.D., Hornell, N. Y.
Edward E. Gillick, M.D., Niagara Falls, N. Y., Health Officer.

NEW JERSEY

Homer N. Calver, New York, N. Y.
Willem Rudolfs, New Brunswick, N. J., Chief, Sewage Investigation, Agricultural Experiment Station.

OKLAHOMA

Professor John Sundwall, Ann Arbor, Mich.
D. Edna Kerst, Tulsa, Okla., Health Director, (Health & Hygiene teacher) Junior High School.

FELLOW OF THE A.P.H.A.

PUBLIC HEALTH ADMINISTRATION SECTION

Herman N. Bundeson, M.D., Chicago, Ill.

APPLICANTS FOR FELLOWSHIP

The names of the following candidates for Fellowship in the American Public Health Association have been approved by the respective Section Councils and by the Committee on Eligibility. They are now published in accordance with the provisions of the Constitution. The Governing Council will take final action at the Detroit Annual Meeting.

PUBLIC HEALTH ADMINISTRATION SECTION: Arthur L. Stone, M.D., Camden, N. J.; Charles W. Armstrong, M.D., Salisbury, N. C.; John Joseph Middleton, M.B., D.P.H., Toronto, Ont.; E. L. Bishop, M.D., Nashville, Tenn.

LABORATORY SECTION: John X. Newman, B.S., Helena, Mont.; Emerson Megrail, M.D., Cleveland, O.; Henry J. Nichols, M.D., Washington, D. C.; J. G. Fitzgerald, M.D., University of Toronto, Toronto, Ont.; Friend Lee Mickle, Hartford, Conn.

SANITARY ENGINEERING SECTION: Harrison P. Eddy, Boston, Mass.

VITAL STATISTICS SECTION: Shirley Wilmott Wynne, M.D., D.P.H., New York City; Henry M. Loomis, S.B., Washington, D. C.

INDUSTRIAL HYGIENE SECTION: Dan M. McDonald, M.D., Akron, O.

HEALTH EDUCATION AND PUBLICITY SECTION: Edgar Alphonso Hines, M.D., Seneca, S. C.; Raymond Sears Patterson, New Brunswick, N. J.

PUBLIC HEALTH NURSING SECTION: Mary Laird, R.N., Rochester, N. Y.

UNAFFILIATED: Horace Cheney Swan, M.D., Hartford, Conn.; Clifford Charlock, Hilo, Hawaii.

ASSOCIATION NEWS

A MOUTH HYGIENE SECTION IN THE A.P.H.A.

The following communication has been received. Comments concerning the proposal may be addressed to the Editor of the JOURNAL.

Mr. Homer N. Calver, General Secretary,
American Public Health Association,
370 Seventh Ave., New York City.

Dear Sir:

We wish to invite the attention of the members of the Association to the possibility of organizing a mouth hygiene section at the next annual meeting.

Such a section would concern itself with mouth hygiene, not only for children, but also industrial dentistry, public school dental clinics, pyorrhea clinics for adults, dietary reform, dental prophylaxis, home mouth prophylaxis, and a number of public health problems related to mouth hygiene.

Of particular interest to us is the place allotted to dental defects and their treatment by public health agencies. That mouth hygiene in its hitherto narrow sense has come to take a place in public health work is admitted by all interested in the welfare of the nation. Dr. Taliaferro Clark, Chairman of the Child Hygiene Section of A.P.H.A., in a paper read before the American Dental Association at the last annual meeting, pointed out the importance of establishing a mouth hygiene division in state departments of health. The statistics gathered by the United States Public Health Service officers sufficiently indicate the prevalence of dental caries among school children.

Dental caries, aside from causing the loss of teeth and deforming the dental apparatus, has ill effects on general health, a fact that can no longer be ignored by those interested in public health.

The problem of mouth hygiene becomes more complex when we consider it in regard to the adult population. The Committee on Industrial Dental Service of the British Dental Association went on record as saying, "Of all causes of ill health none is more widespread in its incidence than dental disease. About 90 per cent of the population are affected. Many cases of adolescent and adult malnutrition or dyspepsia are due to loss or decay of teeth in childhood."

In the light of our knowledge regarding the relationship between mouth infections, joint diseases, endocarditis, tuberculosis and many other systemic diseases, the question of mouth and dental sepsis becomes still graver when we realize that many do not consider dead teeth, especially those without apparent local symptoms, as foci of infection. The absence of local symptoms in cases of mild pyorrhea, crowned teeth, fixed and unsanitary bridgework is usually considered as evidence of absence of infection, a grave diagnostic error.

Up to the present time some attempts have been made by state boards of health or state boards of education to establish dental clinics in public schools. The generosity shown by dental societies and other private organizations volunteering in the work is highly commendable. From the figures given in Dr. Clark's report, there are 106 dental clinics supported by public funds; 48 dental clinics supported by volunteer agencies, and 9 clinics maintained by both public and volunteer funds.

The clinics supported by public funds are not under the supervision of one single agency, but are under a variety of educational and health organizations.

A careful analysis of the situation* will clearly show that the work in this field as it is now carried on does not reach the big mass of our population and that there are a great many who are in need of this service, but who do not at present receive it. From the standpoint of a monetary loss to the nation due to ill health, and in view of the depressing effect disease has on the mentality and vigor of the people as a whole, the problem assumes a social character, and consequently must be solved along social lines. To depend upon private citizens constituting the dental profession, to solve a nation-wide problem, is impractical and of little consequence.

The tendency to resort to obsolete methods of dental treatment in public clinics for school children is not only a waste of public funds, but is actually a menace to the child's health.

* For a detailed exposition of this subject see *Review of Clinical Stomatology*, October, 1924. Complimentary copy will be mailed on request by addressing *Review of Clinical Stomatology*, Aeolean Hall, 33 W. 42nd St., New York City.

But if the public is going to support dental clinics, it must be assured that public funds are used to the best advantage. It is, therefore, of immediate importance to investigate the methods employed in the conduct of these clinics. Are the public funds spent for dental clinics actually accomplishing their task?

In Europe, we are informed by our representatives, public clinics are primarily under the control of central agencies, and the results of our efforts in a similar direction are eagerly awaited by our European co-workers.

The public is urgently looking for reliable information on the care of the mouth and teeth. To date public information, with few exceptions, is in the hands of manufacturing concerns advertising "cure-alls" for pyorrhea, tooth-ache cures and other fakes which mislead the public and hinder the promotion of the scientific care of the mouth. The time is ripe for public health executives to protect the public from the clutches of the nostrum vendors in the field of mouth hygiene.

We are of the opinion that there will be greater hope for a solution of the mouth hygiene problem when its work is carried on under the supervision of central agencies concerned with public health problems, such as the American Public Health Association.

The following dentists are taking an active part in the establishment of this section: Elmer E. Chambers, D.D.S., Warren, Ohio; Harold DeW. Cross, D.M.D., Director Forsythe Dental Infirmary for Children, Boston, Mass.; R. Proctor McGee, M.D., D.D.S., Editor, *Oral Hygiene*, Pittsburgh, Pa.; John L. Kelly, D.M.D., Midtown Hospital, New York City; Louis Ottofy, M.D., D.D.S., Editor, Standard Dental Dictionary, Chicago, Ill.

All members interested in the furtherance of our endeavors are invited to participate in these activities.

Yours fraternally,

ALFRED ASGIS, Sc.B., D.D.S.,
Editor, The Review of Clinical Stomatology, New York City.

FIFTY-THIRD ANNUAL MEETING

Hotel Statler, Detroit, October 20-23, 1924.

COME EARLY

Some of the best papers at the Annual Meeting this year will be given on Monday, the first day of the meetings. Dr. Dick, one of the originators of the Dick test, will speak before the Public Health Administration Section on Monday morning. He will be followed by Dr. Zingher, who is going to Detroit a day in advance to test a number of children so that a demonstration of the test reaction can be shown on Monday.

Mr. Fuller, who has been in Europe this summer, will report to the Sanitary Engineering Section Monday morning on the Conference of Sanitary Engineers held in London. Mr. Fuller is a member of the committee which represented the Association.

Several important reports will be presented to the Food and Drugs Section on Monday morning and the Chairman of the Section will address the session on the future work of the Section.

The Child Hygiene meetings will begin on Monday morning for the convenience of those child health workers who come from the meeting of the American Child Health Association in Kansas City. A number of new speakers appear on the program of this section. On Monday noon the report of the Committee on Health Problems in Education will be presented at a luncheon.

The first session of the Laboratory Section, held on Monday afternoon, will be devoted principally to the subject of diphtheria. A special treat at this meeting will be the address by Dr. Th. Madsen, Director of the State Serum Institute at Copenhagen.

The question of professional training and standards for vital statisticians will occupy a large part of the section meeting on Monday afternoon.

The clinic of the Health Education and Publicity Section has come to be an established feature of the American Public Health Association Annual Meetings. The clinic, which is always well attended, will be held

this year on Monday afternoon, and on Monday evening this section will hold a dinner. The standards for positions in public health nursing will be discussed at the session of the Public Health Nursing Section on Monday afternoon. All nurses concerned with the professional status of nurses will be interested in this session.

Last and far from least, on Monday is the opening General Session. The guest of honor will be Dr. Madsen of the League of Nations, and the Local Committee has promised a special treat for the social gathering after the meeting.

ADDITIONAL PROGRAM INFORMATION

Changes and Times of Sessions

The September JOURNAL carried the preliminary program. The section program chairmen have since sent in certain changes and additions which are summarized in what follows. There is also given below for each section the time its various sessions will be held. However, delegates are advised to consult the final program and the daily bulletin at the Annual Meeting for changes which may be made. Morning sessions will be held from nine to twelve; afternoon sessions from two to four-thirty; and evening sessions at eight.

General Sessions will be held on Monday and Wednesday evenings.

On Monday evening his honor, Mayor John C. Lodge, of Detroit, will be present to welcome the Association.

The presence of all the authors on the stimulating program for Wednesday evening is assured with the exception of Dr. Linsly R. Williams who has been replaced by Dr. Haven Emerson.

The Forum Committee will hold a Public Health Forum on Wednesday afternoon. Dr. Rankin, Chairman of this Committee, will welcome questions for discussion that may be submitted. Such questions may be sent in advance or dropped into the question box at the registration desk in Detroit.

The Public Health Administration Section will hold sessions on Monday morning, Tuesday morning, Tuesday afternoon (joint session with Public Health Nursing Section), Wednesday morning and Thursday morning (joint session with Vital Statistics Section).

Important additions to the first session are papers on scarlet fever by Dr. Dick, and "Public Health and Evolution" by Dr. Ravenel which replaces the report of the Committee on Public Health Nomenclature moved to the fourth session.

In the second session a report will be presented by the committee of the Association which was appointed last year to consider the relationship of hospitals to health departments.

An important paper by Dr. L. L. Lumsden on "Public Health and Taxes" has been added to the fourth session, as well as the Report of the Committee on Venereal Diseases transferred from the first session.

The Laboratory Section will have sessions on Monday afternoon, Tuesday morning and Wednesday afternoon.

Dr. Th. Madsen, Director of the Serum Institute of Copenhagen, will address the Laboratory Section at its first session, and a paper by Dr. Anna W. Williams on "The Production of Agglutins and of Neutralizing Antibodies against Hemolytic Streptococci and their Toxic Filtrates" has been added to the second session. Several interesting scientific trips for the members of the Laboratory Section are on the program for Tuesday afternoon and Wednesday morning.

The Vital Statistics Section will have sessions on Monday afternoon, Tuesday afternoon (joint session with the Health Education and Publicity Section), Wednesday morning and Thursday morning (joint session with the Public Health Administration Section).

The Sanitary Engineering Section will hold sessions on Monday morning, Tuesday afternoon, Wednesday afternoon and Thursday morning. The session on Wednesday afternoon will be a joint session with the Laboratory Section and with the Sanitary Engineering Division of the American Society of Civil Engineers. This Society will have its regular fall meeting in Detroit October 22-25, which gives engineers an unusual opportunity to attend two meetings in one trip.

The Industrial Hygiene Section will meet on Tuesday morning, Wednesday afternoon and Thursday morning.

An interesting symposium on the "Extension of Industrial Hygiene," which will be presented in the first and second sessions, will be discussed by Dr. Woods Hutchinson who has recently studied many of the industrial welfare arrangements in factories in Europe. The paper by Dr. Wade Wright on industrial morbidity statistics has been moved to the second session.

The Food and Drugs Section will hold its meetings on Monday morning, Tuesday afternoon and Wednesday morning (joint session with the Child Hygiene Section).

A report by Dr. C. E. Terry, of the Committee on Habit Forming Drugs, has been added to the first session as well as a paper by Dr. Thom on the Ripe Olive Survey.

The Child Hygiene Section will meet on Monday morning, Tuesday morning and Wednesday morning (joint session with the Food and Drugs Section).

The program was given in full in the September issue of the JOURNAL. The Report of the Committee on Health Problems in Education will be presented and discussed at luncheon on Monday.

The Health Education and Publicity Section will meet on Monday afternoon, Tuesday afternoon (joint session with the Vital Statistics Section) and Thursday morning. It will have luncheon sessions on Tuesday noon, Wednesday noon and a dinner on Monday evening.

This Section will devote its customary clinic this year to state and city health bulletins and the periodicals of voluntary organizations. It will have a desk at Detroit where Mr. Routzahn will be in attendance to give personal consultations on publicity and educational problems. The program for this Section is given in full in the September issue.

The Public Health Nursing Section will have sessions on Monday afternoon and on Tuesday afternoon (joint session with the Public Health Administration Section). A joint luncheon with the Health Education and Publicity section will be held on Wednesday.

The program for this Section is a full and interesting one and is given in the September JOURNAL.

CALL ON YOUR NEIGHBOR

Over a period of fifty years, Annual Meetings of the Association have grown from a single conference where everybody went to all the sessions into nine section meetings and two or three general sessions. This is a striking indication of the extension and specialization of the public health field. Specialization, however, blurs the appreciation of relative values and the delegate to the Annual Meetings now who wishes to keep in touch with developments in the several branches of public health must visit several section meetings. Furthermore, all the papers on vital statistics will not be found in the Vital Statistics Section nor all the laboratory papers in the Laboratory Section, and for the convenience of those who are planning to attend the meeting a summary is given below of those papers in other sections which will attract the members of each section.

Public Health Administration.—Health Officers particularly will be interested in the clinic on state and city health bulletins held by the Health Education and Publicity Section on Monday afternoon. The various papers on diphtheria in the Laboratory Section will also attract many Administrators. The Committee on Nutritional Problems in the Food and Drugs Section will devote its report this year to a consideration of iodine in nutrition, and this report will interest all health workers who come from states in which goiter is a serious problem. A luncheon of the Health Education and Publicity Section, which will deal with the preparation of interesting reports, will also command the attention of many health officers who have this problem to meet.

Laboratory Section.—All Laboratory workers will want to hear Dr. Dick and Dr. Zingher discuss the Dick test in the Public Health Administration Section on Monday morning. The program of the Food and Drugs Section, especially its sessions on Tuesday afternoon and Wednesday morning, comprises many papers dealing with laboratory work.

Sanitary Engineering Section.—The Report of the Committee on Standard Methods and several of the papers to be presented in the Laboratory Section will interest nearly all engineers; also those engineers concerned with water supply will want to hear the Report of the Committee on Nutritional Problems in the Food and Drugs Section, for this report will deal with the relationship of iodine supply and goiter. The program of the Indus-

trial Hygiene Section will also discuss many things of interest to the engineers.

Industrial Hygiene Section.—All physicians will be interested in the program on Wednesday morning of the Vital Statistics Section, which will discuss the relationship of climatology to health; and on Monday moning, in the Public Health Administration Section, Dr. Guy L. Kiefer, Medical Director for the Michigan Bell Telephone Company, will present a paper on Preventive Medicine in Industry. Dr. Dick and Dr. Zingher will also speak at this session on the Dick Test in Scarlet Fever.

Vital Statistics Section.—Statisticians and epidemiologists will find much of interest in the programs of Monday and Tuesday mornings of the Public Health Administration Section. Vital statisticians will also be interested in the program of the Industrial Hygiene Section on Wednesday afternoon, particularly the paper by Dr. Wade Wright, which is a report of a special committee of the National Industrial Conference Board on the "Standardized Classification of Industrial Morbidity Statistics."

Child Hygiene Section.—Three of the papers in the Laboratory Section on Monday afternoon will deal with diphtheria and its prevention. On Tuesday afternoon many who are engaged in child hygiene work will enjoy the papers in the Food and Drugs Section and the joint session of Public Health Administration and Public Health Nursing Sections. The Vital Statistics Section will have a paper on Monday afternoon on the "Trend of Mortality in Children." The Health Education and Publicity program on Thursday morning will also attract a large number of those interested in child health.

Food and Drugs Section.—The programs of the Food and Drugs Section and the Laboratory Section have been arranged so that there will be no conflicts, since the programs of these sections are of mutual interest to the members of both sections.

Public Health Education and Publicity Section.—The sessions of this section will deal with the technique of publicity and educational work, and those who are engaged in this work will find a varied selection of papers in the other sections which will give them all kinds of subject material which can be used in their local communities. Probably many will attend the Public Health Administration sessions, but the several excellent papers in the Food and Drugs Section should not be overlooked because the subject of food is of wide popular interest and often most easily utilized for publicity purposes.

Public Health Nursing Section.—Public Health Nurses engaged in communicable disease work, child welfare or industrial hygiene, will find many papers in the Public Health Administration Section, the Child Hygiene Section, and the Industrial Hygiene Section, that will be helpful to them, and, as many nurses are engaged in health education and publicity work, the sessions of that section will also particularly appeal to them.

General.—All delegates will, of course, be interested in the General Sessions, including the Forum held under the auspices of the Forum Committee. This Forum will be of particular interest to the nurses, public health officers and child health workers. Well known speakers, like Dr. Dick, Dr. Madsen and Dr. Woods Hutchinson, and others whose names appear throughout the program, will attract many whose interests are general rather than specialized. The whole program this year has a remarkable variety of papers from which even the most fastidious can select a personal program both valuable and interesting. The dinner conference on the education of sanitarians, to be held on Tuesday evening, will attract all educators and those interested in the training of sanitarians for the various branches of the public health profession.

ENTERTAINMENT AND THE LOCAL COMMITTEE

Members of the Association in Detroit and Michigan are making plans for a splendid welcome for the Association at its fifty-third Annual Meeting. The Local Committee, under the chairmanship of Dr. R. M. Olin, has a meeting each week in Detroit and arrangements for entertainment and scientific trips have been completed.

On Monday evening following the opening general session there will be a reception with dancing and light refreshments. On Thursday afternoon when the scientific ses-

sions will be completed there will be trips for the delegates to some of the interesting places in the country surrounding Detroit.

The Sanitary Engineers will be particularly interested in the trip arranged for Tuesday morning to the new waterworks pumping station and filtration plant; and on Tuesday afternoon the Laboratory Section and others interested will visit the manufacturing plant of Parke, Davis & Co. This company will serve a luncheon at the plant to the visitors. Wednesday morning there will be a trip to the plant of the Digestive Ferments Company.

There are many other points of scientific interest which certain of the members of the Association will wish to visit, but rather than plan a definite time for such visits it has been decided to request the registration of individuals and small parties at the registration desk and make arrangements for visits at the time the guests desire. Among these points of interest are the following:

Merrill-Palmer School
Harper Hospital
Grace Hospital
Herman Kiefer Hospital
Receiving Hospital
Henry Ford Hospital
Medical Department, Michigan State Telephone Co.
Frederick Stearns & Co.
Detroit Creamery
State and City Health Departments
Bureau of Wet Nurses

The Local Committee which will have charge of the affairs of the meeting is as follows:

Dr. R. M. Olin, Lansing, Chairman
Dr. Henry F. Vaughan, Detroit, Secretary and Treasurer
W. J. Kennedy, Detroit, Finance
Dr. Hugo A. Freund, Detroit, Entertainment
Mrs. Fred A. Alger, Detroit, Entertainment for Women
Dr. C. C. Slemons, Grand Rapids, Arrangements
James Schermerhorn, Jr., Detroit, Publicity
Miss Marjorie Delavan, Lansing, Daily Bulletin
Dr. W. A. Evans, Detroit, Scientific Trips
Dr. W. J. C. Deacon, Lansing, Meeting Rooms

SCIENCE AND COMMERCE

When the scientist has tested his theories of disease prevention and proved their value, the technologist and administrator have a new method for the protection of the public health. New methods require new tools. The toolmakers will exhibit their wares at the annual meeting.

The exhibits this year though no more numerous than has been customary at annual meetings of the Association are of unusual attractiveness. Close to registration headquarters, they will be convenient to visit. Twenty-seven booths will offer a variety of attractions.

Booth No. 15 will be occupied by the Cereal Soap Co. Inc. of New York, where will be exhibited their "Derbac" shampoo soap which is both a preventive and cure for vermin. This soap is a valuable aid in the treatment of sores, ringworm, and dandruff, and is also a tonic to healthful hair. It not only acts directly on the vermin, but is potent in destroying the embryo in the nit as well as dissolving the adhesive material by which the nit is attached to the hair, thereby allowing it to be washed out. The "Derbac" comb which is used effectively in removing the nits will also be shown.

At Booth No. 18 the Cook Laboratories of Chicago will exhibit the Cook Carpule System. This system of hypodermic medication introduces a new principle in technique, eliminating old problems, and makes the giving of a hypodermic injection quick, easy and certain. In the Cook System, the medication is contained in the Carpule, which is loaded into the breech of the syringe much as a cartridge is loaded into the breech of a rifle.

Considerable interest surrounds the exhibit in Booth No. 6 of the Dermatological Research Laboratories, Philadelphia, a branch of The Abbott Laboratories, Chicago. Here will be exhibited the D.R.L. brands of Arsphenamine, Neoarsphenamine and Sulpharsphenamine; also the latest developments of their laboratories, Potassium Bismuth Tartrate with Butyn, Metaphen, Sodium Thiosulphate and Thiosinamine. The Dermatological Research Laboratories were the first firm in America to manufacture Arsphenamine, Neoarsphenamine and Sulpharsphenamine. They enjoy splendid and well merited reputation.

At Booth No. 7 the DeVilbiss Manufacturing Company of Toledo will show the

DeVilbiss Atomizers, Nebulizers, and Powder Blowers. A cordial invitation is given to the members and guests at the convention to visit this booth, where the representative will be pleased to give any information desired.

The exhibit of the Digestive Ferments Company of Detroit, in Booth No. 22, will consist essentially of a display of culture media. The same media will be shown in the dehydrated form as prepared by the company and also as prepared for use in the laboratory. Attention will be called to the ordinary uses of the more common media and to the characteristic reactions of the differential media.

In space No. 9, Fairbanks, Morse & Company, of Chicago, will have on exhibit their entire line of health scales, including the white enamel personal weighing scales for school room, hospital or home; the special mahogany finished school room scale; the clinic scale for babies and children; and the portable health scale and baby scale. These scales have been designed with special reference to the requirements of public health work, particular attention being paid to the simplicity of sterilization.

At Booth No. 3, occupied by the J. B. Ford Company of Wyandotte, Mich., the following Wyandotte products will be exhibited: Wyandotte Sanitary Cleaner and Cleanser, used for general cleaning; the Wyandotte Detergent which cleans painted surfaces without marring or dulling, such as floors, marble or tile, etc.; and Wyandotte Yellow Hoop, a laundry soda, which for twenty-five years has been well known to laundry owners.

Booth No. 16 will be occupied by The Gilliland Laboratories of Marietta, Pennsylvania, displaying a complete line of biological products. They have, from time to time, added to their list biological products of proven reliability. They have special plans for the sale and distribution of biological products through the boards of health. Their representative in charge will be glad to explain these plans in detail.

The John Hancock Mutual Life Insurance Company, Boston, Mass., in Booth No. 19, will have for the main feature of its exhibit a motion picture entitled "Preventing Diphtheria" which shows in story form the value of the Schick Test and Immunization treatment. A pamphlet treating of the same subject will be given out. Between the showings of the motion picture there will be illuminated cancer slides giving facts and advice about the disease. The various health pamphlets of the company will be distributed.

At the exhibit of the Hoffmann-La Roche Chemical Works in space No. 14, particulars may be obtained relative to prophylactic campaigns against goiter, and the results. The Iodostarine Chocolate Tablets made by this firm, which have been the prophylactic agent employed, will be featured.

In space No. 10 Horlick's Malted Milk Company, Racine, Wisconsin, invite your attention to their exhibit, where the well-known "Horlick's" products will be interestingly presented. They will also demonstrate the new Dumore Electric Mixer—Model No. 6—"Horlick's" which is very convenient for mixing delicious malted milk beverages in the home, and for general household use.

In Booth No. 23, the Laboratory Products Company of Cleveland will exhibit S. M. A. This product is an adaptation to breast milk which resembles breast milk chemically and physically. It gives excellent nutritional results in most cases, and prevents rickets and spasmophilia. It is not necessary to modify S. M. A. for normal, full-term infants, for it contains the essential food constituents in proper balance. As the infant grows older, therefore, it is only necessary to increase the amount of S. M. A.

At Booth No. 21 Mr. Lawrence W. Luellen of New York, inventor of the paper drinking cup fifteen years ago, will exhibit his latest invention, known as the Serv-A-Dish. Recognizing the dangers from bacteria on eating utensils which are seldom sterilized, Mr. Luellen has devised a single service, porcelainized paper plate divided into four compartments which is impervious to grease, acids, or juices, resists the cutting edge of a knife, and can be used for a complete meal. Health authorities should welcome this new device which makes possible the elimination of carelessly washed dishes in public eating places.

At Booth No. 5 the Lyons Sanitary Urn Company of New York will exhibit their Sanitary Cold Milk Dispenser that assures the correct mixture of the milk with its butterfats. The milk is drawn out through a spigot and no agitator or other mechanical means of agitating is necessary. The Dispenser does the work automatically.

The exhibit of the Metropolitan Life In-

surance Company of New York at Booth No. 13 will consist of five panels of statistical charts of existing and prospective problems of life extension. Each panel will contain six graphic records of the important facts in mortality and morbidity statistics which bear upon the problems of health conservation. There will also be available for distribution at the exhibit booth copies of Dr. Dublin's paper "Some Problems of Life Extension."

In Booth No. 24 the Michigan Department of Health will show special features of interest to health administrators. Diagrams on exhibition will give the organization place of the whole department and of various bureaus. Complete sets of blanks will be available for those interested. In addition to actual administrative features, it is planned to show several models which have proved particularly effective in education.

Space No. 20 will be occupied by the Normandie Import Company of New York City, who will feature the "Automatic Health Clown," already introduced to the members of the A.P.H.A. through the advertising pages of the JOURNAL, in an interesting series of costumes. Public health organizations are as eager as commercial concerns to promote their propaganda effectively, and rarely has a method been devised which will so easily draw a crowd or so entertainingly put across a message as this courteous, smiling young gentleman.

In Booth No. 1 "Nujol—Safe and Effective" will be exhibited by the Nujol Company of New York. They call attention to the lubrication method of overcoming constipation, which came into prominence first as a result of the researches of a distinguished British physician. His findings were later concurred in by many famous physicians both here and abroad.

Booth No. 2 will be occupied by the Chas. H. Phillips Chemical Co. of New York, who will exhibit their well-known "Milk of Magnesia," Phillips' Phospho-Muriate of Quinine Compound and Phillips' Digestible Cocoa Compound. Liquid Magnesia, invented by Mr. Chas. H. Phillips about fifty years ago, supplanted the magnesia which was then used only in the solid form. It presents freshly precipitated pultaceous hydrous oxide of magnesium $Mg(OH)_2$ in its highest purity, and possesses all the medicinal properties of solid forms of magnesia without their disadvantages.

In Booth No. 17 the Terre Haute Sanitary Garbage Container, invented by Dr. Geo. T. Johnson, Health Officer of Terre Haute, will be shown. This moderately priced article furnishes a garbage can which is always covered, which cannot be bent out of shape, and the chances of its being stolen are practically eliminated. A strong steel frame holds the can in place off the ground and the self-closing cover is hinged to this frame. The frame is securely anchored to the ground in a few minutes so that it cannot be carried away or overturned. Health officers can readily appreciate these advantages.

Trans-Lux Daylight Picture Screen, Inc., New York City, in Booth No. 11 will show an interesting exhibit of their new Trans-Lux Daylight Picture Screen and Projectors. This screen makes it possible to show standard glass lantern slides or motion pictures in any open fully-lighted room. With this stereopticon, glass slides are projected as distinctly as a steel engraving in any desired location. The Trans-Lux opaque projector, also exhibited, is the first instrument developed which permits any material, such as post cards, photographs, diagrams and book pages to be projected directly.

At Booth No. 8, the Wallace & Tiernan Company of Newark, N. J., will exhibit the W & T Pedestal Chlorinator for the sterilization of water supplies; the W & T Chloro-Meter for the automatic proportional sterilization of small water supplies; and the W & T Ortho-Tolidin Testing Outfit to determine the presence of free chlorine in water. There will also be demonstrated the W & T Inhalator for the therapeutic use of chlorine in the treatment of respiratory diseases. This novel feature will be of much interest to the visiting delegates.

At Booth No. 25 the Health Department of Detroit will portray some of its most important activities, particular emphasis being placed on dental and tuberculosis work.

EMPLOYMENT BUREAU

POSITION WANTED

Position wanted announcements will be carried for one insertion at a charge of $2.00 per insertion. Copy should be received at the New York office by the 8th of the month preceding publication.

Wanted: Position as director or assistant director of public health laboratory. Thoroughly versed in all modern laboratory procedures; ten years experience; at present, director of municipal laboratory. Wish to change for good reason. Correspondence invited. References furnished. Address 314 B. M., care this JOURNAL, New York address.

Chemist-Bacteriologist desires position. Experienced in chemical and bacteriological analysis of water and the operation of a water filtration plant. Also experienced in analysis of milk, foods, urine, sewage, etc. University graduate. Single. Address 313 M. B., care this JOURNAL, New York address.

Wanted: Full-time administrative position in municipal or county health work, or may accept an industrial position. Have M.D. degree, public health training in an A-1 school. Available any time. Address 315 H. R., care of this JOURNAL.

Wanted: Position as epidemiologist or other public health administrative position. Am now full-time health officer in a large industrial rural county. Member A.P.H.A. graduate class A school, interne Philadelphia General, five years regular Medical Corps of Army, three years full-time county health officer. Prefer duty in west. Present salary $4,900. Address 316 M. B., care of this JOURNAL, New York address.

Statistician, with several years' experience as statistical expert, U. S. Department of Labor, and as state registrar of vital statistics, desires new connection. Member A.P.H.A. since 1916, and American Statistical Association since 1906. Available on reasonably short notice. Address 317 D. F., care of this JOURNAL, New York address.

Wanted: Position as full-time health officer or other position in health work, by man with twenty years' experience in all phases of health administrative work. Can produce results. Open for immediate acceptance, having recently resigned position. Best of references. Address 318 A. H., care of this JOURNAL, New York address.

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to business office in New York City. In replying give age, professional training, salary requirement, previous positions held and three or more references.

Wanted: A public health laboratory assistant for a district board of health laboratory. Assistant under supervision of health officer, but position requires laboratory management as well as technical skill in performing laboratory tests. Salary, $1,600 to $1,800. Address, District Department of Health, City Hall, Oberlin, Ohio.

Wanted: By a national health agency a field representative for lecturing, organization and legislative work. Salary $4,000–$5,000. In replying, state training and experience. Address 580, care of this JOURNAL, New York address.

Wanted: Interne, Communicable Disease Hospital, Baltimore, Maryland. Six months service, Forty Dollars per month, with maintenance. Address 581, care of this JOURNAL, New York address.

UNITED STATES CIVIL SERVICE EXAMINATION

Assistant Scientific Aid in Biological Assay.—Examination will be held throughout the country on October 8 to fill vacancies in the Bureau of Chemistry, Department of Agriculture at an entrance salary of $1,500 a year. Advancement in pay may be made without change in assignment up to $1,860 a year.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil service examiners at the post office or custom-house in any city.

BOOKS AND REPORTS REVIEWED

Health, *a Quarterly Magazine devoted to health in China, published by the Council on Health Education, Shanghai, China.*

Le Mouvement Sanitaire, *Official Organe de L'Association Médecins Hygiénistes Français.*

Our daily problems seem of such great and pressing importance that we are inclined to forget that the roots of these problems often lie beyond the confines of our immediate territory. Local health work will be advanced by a national education of the importance of public health, and similarly our national problems will be clarified by a world-wide enlightenment. It touches us very closely, therefore, when new activities are manifested in the public health field in other countries. From France and China come two new periodicals dealing with public health.

The first issue of the Chinese periodical is for March, and the text is about equally divided between English and Chinese. Many people believe that the field of public health in China is like a stagnant pond with not a ripple on its surface nor a sign of life. The reason for this, according to the new journal, is buried news, and *Health* has devoted itself to the task of disinterring this news and presenting it for the information of socially minded doctors, nurses and lay workers in China. *Health* is edited by Dr. W. W. Peter, whose striking activities in health education in China have been keenly appreciated by many in this country. His friends, therefore, will watch with great interest this new undertaking in the field of educational work.

The articles in English are not technical in character, but are addressed to those who are professionally interested, rather than the general public. A curious and pleasing simplicity of style pervades the issue, although many people contribute to its columns.

This new journal is the realization of a dream which began four years ago with the Executive Committee of the Council on Health Education, but the policy of this new journal is still in the making. The second issue shows considerable improvement in typography and layout, and includes an editorial section.

The new journal from France is much more technical, and resembles in content and purpose the AMERICAN JOUR. OF PUBLIC HEALTH. Its purpose, as outlined in the first issue, will be to present general reviews and interesting inquiries in the different branches of public health; to chronicle the development of public health work in France and abroad; to record the official acts and legislative decisions relating to public health, and finally, to constitute a forum for the public health profession of France for the expression of personal opinion and discussion of problems.

The first issue to appear is for May, 1924. This contains articles by Dr. Roux and Professor Bernard and others whose names are known in this country. A pleasing touch, which is seldom found in foreign technical journals and almost never found in this country, is a section edited by Dr. Brieu, consisting of one page which deals in a light and semi-humorous vein with pertinent problems.

Both of these new periodicals will be welcomed by sanitarians in this country, and the fresh viewpoint which they bring will be a stimulus to our own work.

Studia Mendeliana.—*Ad centesimum diem natalem Gorgori Mendelii a grata patria celebrandum adjuvante ministerio Pragoeano edita. Brunae* 1923. *Apud Typos.* 414 *pp. portrait. Illustrated by plates and figs. in text.*

The one hundredth anniversary of the birth of Gregor Mendel (born July 22, 1822), abbot of Brunn discoverer of the fundamental laws of heredity, was celebrated September 22-24, 1922, in the city of his birth. An international committee of investigators in genetics and eugenics gathered in gardens of the monastery where this pioneer experimentalist grew his hybrid peas and unravelled the mysteries of heredity. The results of their conference have been published in a volume of researches which will illustrate both the extensive ramifications and the intensive specializations to which his elemental and portentous discoveries have given rise. This volume contains original contributions, some of which only indirectly illuminate problems of human health or welfare, while others bear directly upon such

problems. Among the twenty-four titles contributed by investigators from ten different nations we note one on Mendelism and medicine dealing with the inheritance of insanity. Another presents a mathematical analysis of the problem of ancestral inbreeding with the formulae for human generations with varying degrees of inbreeding for fifty-seven generations, or to the beginning of the Christian era. Species change and species conservation, the possibility of communism, a hereditary factor in terms of an environmental equivalent, modifications of sex ratio, are titles which challenge our interest, while studies of hybridization of rhododendrons, and of marigolds, the improvements of hyacinths, and the nature of plant chimaeras remind us that Cupid is no gardener.

The Microscopic and General Anatomy of the Teeth Human and Comparative.—*By J. Howard Mummery, C.B.E., F.R.C.S. Second Edition. Humphrey Milford, Oxford University Press, xvi+618 pp., 41 pls., 20 figs. in text.* 1924.

The second edition of Dr. Mummery's scholarly treatise dealing with the gross and the microscopic structure of human teeth has been enlarged by the inclusion of recent additions to our knowledge in these fields. There has been added also an extensive second part which is concerned with the general and comparative anatomy of teeth in the various classes of vertebrates, and especially in the orders of the mammalia. A closing chapter deals with the evolution of the vertebrate dentition. The author includes summaries of the various theories of the origin of the cusps of mammalian teeth. He rejects the theory of Röse that these originate from the simple styloid type and Osborn's tritubercular theory. He elaborates Bolk's recent dimery theory that the mammalian molar is derived by the transverse fusion of a buccal and a lingual tricuspid element of the reptilian type, and the still more inclusive generalization that mammalian teeth of all types are equivalent from the evolutionary point of view. All have the potentiality of developing six cusps, though this is latent or suppressed in the anterior teeth.

The text is well organized, the bibliographic references are critically chosen, the illustrations are pertinent, and in the main are skillfully reproduced, largely from excellent microphotographs or from simple diagrams.

The Organization of a Nutrition Service.—*The American National Red Cross, Washington, D. C.*, 1924.

Many activities conducted by voluntary agencies and even health departments masquerade under the name of nutrition work. Annual and other reports of such organizations blithely mention "nutrition service," when an examination of the facts shows that such organizations were merely providing free milk to indigent school children or furnishing equipment for serving lunches. It is heartening, therefore, to find that the American Red Cross emphasizes the fact that its nutrition program is essentially an educational program. It is easy to dole out money for free lunches, but it takes wisdom to direct the expenditure of the same funds so that real education will be accomplished. This pamphlet stresses the value of full-time trained nutrition workers for Red Cross chapters, and it recognizes that malnutrition is not due to poverty alone, but that lack of information and indifference are dominant contributing factors. The relationship between food and health is coming to be very generally recognized, and the stimulus by national headquarters of the American Red Cross of intelligent nutrition work by its chapters is a helpful contribution to public health work.

PUBLIC HEALTH NOTES

GENERAL

Discontinuance of the "Clinic."—The absence of the "Clinic" from the columns of the Boston *Transcript*, on Wednesday afternoons has led to inquiry which indicates that the health service has been discontinued. Those who have been readers of that department, including many physicians, health workers and sanitarians in all parts of the country, will regret the action on the part of the *Transcript*, and hope for a reconsideration of the matter.

The "Clinic" was established about fifteen years ago when Mr. Tracy was editor, and has appeared regularly in the Wednesday issues ever since, excepting for a short time during the war. It has presented a review of health procedure, medical and sanitary, omitting no corner of the earth from its items, and has attracted the attention of health authorities at home and abroad. Many news matters of consequence found first presentation in its weekly abstracts. Its list of correspondents included workers in China, Japan, Korea, the interior of Hindustan, Africa, South America and Polynesia, as well as those of our own country. A great many movements first recognized by the "Clinic" later became regular procedure in health administration. It has stood for health education from the beginning. It has truly been a pioneer in the most important health movement of the times.—*Monthly Bulletin*, Health Department, Boston, Mass. (July), 1924.

Clearing up Diphtheria Carriers.—While on duty at the United States submarine base, San Pedro, California, the writer made the following observations: During a small epidemic of diphtheria in one of the schools attached to that base, one carrier was found who failed to respond to any of the known methods. While under observation, he developed acute appendicitis, and it became necessary to operate. Following the ether anesthesia, it was never able to get a positive culture from his nose and throat.

An officer who was a diphtheria carrier, was brought to the hospital later and inhalations of ether were given him every morning for a period of approximately five minutes with an open method, only sufficient ether being given to produce marked drowsiness. Following the fourth inhalation, his nose and throat became negative. After a period of rest, pseudodiphtheria organisms were found in the nose and throat, and these in turn disappeared following four other inhalations and his throat remained negative. Since that time three enlisted men in the contagious wards persistently carried diphtheria organisms after an attack of diphtheria, and in every instance their throats and noses became negative after five mornings of inhalations, and remained negative. Though the writer realizes that five incidental cases do not definitely establish anything, the importance of clearing up carriers of various sorts in the naval service is of sufficient moment that he feels that he should report the procedure in order that its merits or demerits may be determined. R. I. Longabaugh, Lieutenant Commander, Medical Corps, U. S. Navy. *United States Naval Medical Bulletin* (August), 1924, p. 190.

Outdoor Recreation Conference.—At the call of the President of the United States, a national conference on outdoor recreation was held in Washington, D. C., May 22 to 24. Delegates from one hundred twenty-eight national organizations, including many in the public health field attended the conference and voted to make the conference a permanent institution. An executive committee and advisory council were created and by-laws drawn up. Seventeen special committees were appointed to study various aspects of recreation and report to the advisory council. The program of work of the new organization is now largely tentative, but its principal mission will be to function as a clearing house or correlating agency for its member agencies that are interested in the development and promotion of recreation "in which the land, water, forest, plant, scenic or wild life resources of the United States are essential."

The President has appointed five cabinet members and the Assistant Secretary of the Navy as a committee on outdoor recreation. The conference therefore has a semi-official aspect and has its headquarters in the Navy Building in Washington.

Maternal Welfare.—A nation-wide movement for improved conditions in maternal welfare is being inaugurated through the combined efforts of a joint committee representing the American Gynecological Society, the American Child Health Association, and the American Association of Obstetricians, Gynecologists and Abdominal Surgeons.

An appeal is being made to the secretaries of the state medical associations to enlist the cooperation of their members and also of the constituent county medical societies to stress the subject of obstetrics in the programs of their meetings, and to try to have more papers and discussions on the topics vital to this most essential branch of work.

Recent statistics show a deplorably high mortality in maternity work in our country. A Washington report gives the United States the unenviable position of third from the highest death rate in both sepsis and eclampsia among the seventeen civilized nations of the world. These two accidents are almost absolutely preventable. Among the reports from sections where prenatal care is taught and where aseptic care is observed in labor, the mortality is reduced one-third to one-half the average in the same region.

The committee hopes within five years that obstetrics may be again placed on the plane with internal medicine and surgery, a dignity which it formerly occupied in the colleges and in the profession, as one of the three great branches of the healing art.

Cooperative Milk Inspection.—The dairy farmers producing milk for the Philadelphia milk shed organized into the Interstate Milk Producers Association have recognized that not only can the dairyman make more money through cooperative marketing, but they believe that if the standard of quality is raised, the consumption of milk will be increased. They have drawn up a plan, therefore, for sanitary dairy regulations fully as exacting as those required by any city health department. The producers have induced the Philadelphia Dairy Council to appoint inspectors to visit the farms of its members and persuade them to produce better milk. These inspectors are experts in dairy sanitation as well as inbreeding and feeding. They have been welcomed by the farmers, and the whole plan has met with the approval of the dealers and the health authorities. A description of the plan is given in the *Country Gentleman* for August 30, 1924.

American Heart Association.—The association founded in New York in 1915 under the name of the New York Association for the Prevention and Relief of Heart Disease has, in line with the practice of other health organizations, simplified its title to the New York Heart Association. Similar organizations have been established in other large cities, and in May of this year plans that have been in progress since 1922 culminated in the formation of the American Heart Association. Both the New York Society and the national association have their headquarters at 370 Seventh Avenue, New York City.

The New York Association has prepared charts for educational use in clinics, distributed literature, and conducted other educational work. It has begun the publication of a well printed "Bulletin." Classes for boys and girls with heart disease have been started, and with the encouragement of good medical supervision and the stimulus of interesting occupation these people bid fair to become self sustaining.

Periodic Health Examinations.—In order to ascertain the attitude of the medical profession regarding periodic health examinations *Medical Economics* enclosed a questionnaire in its May issue asking its readers to vote on two questions: (1) Are you in favor of periodic health examinations? (2) Do you favor advertising the necessities for such examinations in the lay press?

A cursory examination of the thousands of ballots received indicates over 94 per cent of affirmative replies. Without the full support of the physicians the campaign for periodic health examinations cannot succeed. The campaign has been waged, assuming that this support would be forthcoming, but with no assurance of it. It now appears that this assumption was justified and credit is due *Medical Economics* for securing this information directly from the doctors themselves.

Bronze Bust of Pasteur Dedicated.—On September 16th a bronze portrait bust of Louis Pasteur was dedicated at the American Institute of Baking in Chicago. This bust was presented to the Institute by the Carlsberg Fund and the Directors of the Carlsberg Glyptotek and the Carlsberg Brewery at Copenhagen. The presence of this bust at the Institute will serve as a continuous reminder of the great Pasteur's contributions to the technology of baking.

STATE

New Mexico

Abstract of the report of the Division of Sanitary Engineering and Sanitation for the first half of the year, 1924.—The work has been chiefly along the lines of water supply and sewage treatment inspection, although other features have entered in as noted in the following summary.

There are to date, 38 public water supplies within this state, serving incorporated towns. Besides this there are seven supplies owned by large mining companies, and fourteen supplies owned and operated by railroads furnishing water for drinking and culinary purposes in interstate traffic, making a total of 59 public water supplies that are under our supervision. During the past six months all of these supplies have been inspected at least once. A total of 89 inspections have been made, resulting in 18 recommendations being made for improvement.

At the municipal elections April 1, 1924, six towns voted bonds for waterworks, which shows that the people of the state are beginning to realize that a safe water supply is one of the greatest assets of which a town can boast. Installation of sewerage systems naturally comes slower.

It is of interest to note that five of the larger water companies of the state have within the last six months joined the American Water Works Association. They are: Public Utilities Co., Carlsbad; Deming Water Dept., Deming; Aqua Pura Co., Las Vegas; Board of Public Works, Raton; Santa Fe Water & Light Co., Santa Fe.

New Mexico's dry climate and abundant sunshine have been a Godsend in sewage treatment. In any other climate, serious trouble would long ago have been experienced from the carelessness prevalent throughout the state. Of the total of 50 incorporated towns in the state, only 21 have sewerage systems and of these only 13 treat their sewage in any way. Besides this number there are 5 mining camps which are wholly or partly sewered. In all of these camps there is some form of sewage treatment. It has been one of the most difficult problems to impress upon the minds of town officials the importance of the proper disposal of human wastes. Saving one town, no direct opposition has been experienced, but all are inclined to be somewhat indifferent. Thirty-one inspections of sewerage systems have been made during the past six months.

As far as can be ascertained, there are twenty swimming pools operating within the state. Only four of these pools comply strictly with regulations regarding construction features. Where the pools nearly meet specifications, special permission has been given them to operate by increasing the amounts of water per bather required, or some other measure to meet their local problems and make the pool safe for persons to use.

Another problem is the proper testing of milk supplies, especially in counties which do not have full-time health units. Milk samples cannot be sent into the State Laboratory at all because their condition would so change during transportation that the test would be valueless. It is therefore expedient to plan some way in which this important work can be handled. This could be done in a field laboratory operated by a sanitary engineer and an assistant. Laboratory equipment should include necessary apparatus and supplies for the chemical and bacteriological examination of water and milk. When sufficient tests had been made in one locality the laboratory could then be moved to another throughout the whole state. This would relieve the State Laboratory of most of the water work, and at the same time make hundreds of tests yearly which cannot possibly be made otherwise.

New York

Training Course for Labor Inspectors.—A course will be given at Columbia University, beginning Monday, September 29, 1924, to offer practical training to those who are planning to become labor inspectors either in New York State or elsewhere. It will be valuable to industrial secretaries of various organizations and to social workers who wish to become more conversant with problems of industry. Applicants should secure permits to register from the instructor, Miss Lydia E. Sayre, Consumers' League of New York, 289 Fourth Avenue. Registration begins September 17 in Room 315, University Hall. There will be a fee of $6 for each session or part thereof. For further information address the Secretary, Columbia University, New York, N. Y.

The poliomyelitis cases for 1924 seem to be definitely centering about the city of Syracuse. Last year this city enjoyed comparative freedom from the disease, but in 1922, in common with four other cities of central New York, it constituted quite a well marked center for the cases that occurred that year. There were six cases reported from Syracuse during the month of June this year and thirty-two during the month of July. The initial cases were children of Italian families and lived in a comparatively circumscribed area within three blocks north of the Erie Canal.

While it may be only coincidence, it is interesting to note that the epidemic of 1916 in New York City began near the old Gowanus Canal in Brooklyn among children of Italian parentage and the epidemic of 1921 in Utica likewise had its beginnings near the old Erie Canal bed and among Italian children.

A second focus of infection appears to be developing in Oswego. Out of the six cases reported up to August 1, four appear to be children of Italian parentage. In both Oswego and Syracuse cases are appearing in considerable number much earlier than at any time since the epidemic of 1916. In 1921, during the Utica outbreak, cases did not appear in Syracuse until after the State Fair late in September. In 1922 the cases began appearing in August.

Lead Poisoning Investigation—In New York State, the Division of Industrial Hygiene of the Department of Labor is conducting an intensive drive throughout the state for the purpose of making a complete study of lead poisoning. Cause, elimination and prevention of the hazard will be inquired into and physical examinations made of those exposed. The main point is to determine which industries or occupations have a definite poisoning hazard. The mission will be to determine effectively such measures of practical value as may be recommended to the industries and also precautions to be followed by workers themselves. A plan has been outlined so that each investigator, lay or technical, will follow the same general method, and in addition the professional and technical members will pursue such special work based on their technical or professional training as may become necessary. The personnel assigned to the investigation will consist of medical inspectors, chemical engineer, mechanical engineer, chemist, safety inspectors and factory inspectors. All those industries where lead is reputed as a hazard are listed in *Bulletin* 306, United States Dept. of Labor. As it would be impossible within a limited time to cover every industry so listed, the Metropolitan District was selected as the initial point and the investigators assigned to cover the industries with which they were practically or technically conversant. From their findings it will be possible to concentrate on such as present a marked hazard, eliminating those where it has been eliminated or materially minimized. Upon completing Greater New York District, each investigator will be assigned counties in the upstate section.—*Industrial Hygiene Bulletin*, New York State Department of Labor (Aug.), 1924.

Oregon

The Conference of the Pacific Coast Health Authorities was held August 6. This was the third meeting of this association. Representatives from British Columbia, Washington, Montana, California, Arizona, Texas and Oregon participated.

The conference of the Oregon city and county health officers was in the nature of a school of instruction. Dr. J. N. Force of the University of California discussed the methods of better vaccination and told of the work that has been done to improve the potency of present-day vaccines. A paper on the treatment of scarlet fever and a demonstration of the Dick test formed an important part of the program. Three public meetings were held, which were largely attended.

Pennsylvania

Mr. Samuel M. Heulings, formerly Dairy Engineer of the Sheffield Farms Co., Inc., New York City, a dairy engineer of international reputation, has affiliated himself with the Board of Health of Lower Merion Township, Penna., through his recent appointment as Deputy Milk Control Officer. Mr. Heulings is giving in the interests of public health a knowledge acquired from many years experience in practical milk plant operation. He will assist Dr. George W. Grim, present Milk Control Officer in securing complete enforcement of regulations of the Lower Merion Board of Health, concerning pasteurization. The Pennsylvania State Department of Health require that all milk to be sold as pasteurized must be heated to a minimum temperature of 145° F. and held at not below that temperature for a minimum period of 30 minutes.

PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

Further Studies with the Dick Test.—Out of a group of 4,570 individuals, varying in age from a few weeks to over twenty years, 34.4 per cent gave a positive Dick reaction. Neutralized toxin was found to be the best solution to use for a control. The Dick test in scarlet fever convalescents has shown that a large majority give a negative Dick reaction after the tenth day. A few patients, however, give a positive reaction throughout convalescence. Continued positive reactions in some patients, who showed desquamation indicated that there may be more than one toxin produced by the hemolytic streptococcus associated with scarlet fever. The author suggests that in a number of cases we may not be dealing with scarlet fever, but with a condition which is classified as such because we have no definite criteria except the symptomatic clinical ones. A number of strains from various sources were studied and several were found to produce a toxin that could be neutralized by convalescent serum. The author found a large per cent of children Dick negative after being immunized with increasing doses of scarlet fever streptococcus toxin.—Abraham Zingher, *Proc. Soc. Exp. Biol. & Med.*, 21:508 (May), 1924. H. B.

Immediate Death by Botulinus Toxin.—A volatile thermostable toxic substance, causing immediate death in mice, was found in culture filtrates of *B. botulinus*, using perenteral introduction of amount greatly in excess of a minimum lethal dose. The volatile substance was identified as ammonia. Death from injection of 0.1 gm. of ammonium salts can be distinguished from death due to toxin, both by symptoms and by absence of an incubation period. With 0.01 gm. injections death may be delayed, and is not so easily distinguished from botulism. This is of importance in connection with examinations of partially spoiled foods. Animal controls protected by antitoxin, and tests of thermostability are suggested as precautions.—Bronfenbrenner, Schlesinger and Orr, *J. Exp. Med.*, 40:81 (July), 1924. M. S. M.

Biology of Streptococcus III.—Strains of hemolytic streptococci from cases of scarlet fever occurring in New York, San Francisco, Chicago, Baltimore and Copenhagen, all interagglutinate with immune sera prepared with these strains. Sera prepared with these strains do not agglutinate pyogenic streptococci or strains isolated from cases of septic sore throat. The strains obtained from the throats of patients from an epidemic of scarlet fever and the strain from milk responsible for this epidemic fall into the scarlatinal group according to these agglutination tests. Absorption tests can be carried out with these strains and sera under proper conditions. A group of hemolytic streptococci biologically distinct from streptococci from other sources than scarlet fever is constantly associated with scarlatina. They constitute a group of closely related streptococci which may be identified by agglutination tests.—Stevens and Dochez, *J. Exp. Med.*, 40:253 (Aug.), 1924. M. S. M.

Viability of Hemolytic Streptococcus.—The findings of Robertson, Sia, and Woo with regard to the preservative action of 0.1 per cent gelatin in suspending fluids for the pneumococcus have been confirmed for the streptococcus. Suspension fluids which allow the preparation of dilutions of viable organisms which are not germicidal over periods of from 12 hours to several days are discussed. The gelatin seems to serve slightly as nutrient material, and also serves as a protective means against mechanical injury of dilution.—Meleney and Zung-Dau Zau, *J. Exp. Med.*, 39:811 (June), 1924. M. S. M.

Preservation of Blood.—Sodium fluoride, 60 mg. per 10 c.c. of blood, either alone or with potassium oxalate, preserves blood for blood sugar, urea, non-protein nitrogen, creatinine, and uric acid up to 48 hours at 28.5° to 31.0° C.; up to 96 hours for all except non-protein nitrogen. A series of experimental results are given using this method as compared with other preservative methods.—Denis and Beven, *J. Lab. and Clin. Med.*, 9:674 (July), 1924. M. S. M.

Neutralization of Alkaline Water.—Polychrome stains give optimal results in solutions that are near neutrality. Alkaline solutions increase, and acid solutions decrease the intensity of the blue component of the stains. For the correction of slightly alkaline distilled water, carbon dioxid will give satisfactory results. The simplest procedure is to utilize the carbon dioxid of the breath by blowing into the mouth of a bottle partly filled with the water to be corrected, and shaking well. If one uses a small (1 or 2 ounce) bottle, enough carbon dioxid will be absorbed, after blowing into the bottle three or four times, to neutralize most of the alkaline waters ordinarily encountered. Indicators are generally unnecessary, as there is little danger of overcorrection.—Maurice N. Richter, *Jour. A.M.A.*, 83:357 (Aug. 2), 1924. O. M. M.

Spinal Fluid in Encephalitis Lethargica.—Data is presented by the authors on spinal fluid examinations in 35 cases of encephalitis lethargica. They emphasize the importance of quantitative sugar determinations, having found over .06 per cent sugar in 91 per cent of the fluids studied, using the Folin-Wu method. They consider such quantitative sugar estimations valuable in differentiating encephalitis lethargica from tuberculous meningitis. While they do not consider the amount of sugar present in the cerebrospinal fluid pathognomonic of encephalitis lethargica, they say it is of recognized utility in making the diagnosis.—Foster, H. E., and Cockrell, J. R., *Am. J. Med. Sc.*, 167:696 (May), 1924. P. L. K.

Standardization of Biological Stains.—The authors point out the necessity for the standardization of biological stains in nomenclature, specifications, in preparation of staining solutions, and in technic of staining. The results of spectrophotometric studies with methylen blue stains are given, as well as with Giemsa, Wright's, and MacNeal's tetrachrome stains. Gram's stain is also discussed. Numerous observations are made in too great detail to be here reproduced, among which perhaps the most significant is the discussion of the use of buffered solutions in the preparation of staining solutions, and the careful control of pH throughout. A pH of 6.4–6.5 is recommended for Wright's and MacNeal's stains, 7.5 for Giemsa's followed by a buffer of pH 6.5 for differentiation, and 10.5 for methylen blue as given by Loeffler's formula. pH 12.5 (N/10 NaOH) gave even better results with methylen blue.—Scott and French, *Military Surgeon*, 55:229 (August), 1924. M. S. M.

Control of Virulence of Pneumococcus.—In order to control the virulence of the pneumococcus, special culture media and methods of increasing virulence are outlined. The egg media of Dr. E. G. Murray is used for culture storage. Well beaten eggs and an equal quantity of an 8 per cent saline are added, the medium tubed, slanted and autoclaved. To prevent bubbles the lid is screwed down before any heating takes place. A special broth extract, also described by Dr. E. G. Murray, was also employed. An 18 hour broth culture was used to obtain a measure of the virulence of an organism. Known dilutions are made in saline solution so that tube 1 contains a 1:10 dilution of the original broth culture, tube 2, 1:100, etc., till the highest dilution required is obtained. One-tenth c.c. of each dilution to be tested is then injected into the peritoneal cavity of two mice of known weight. The highest dilution which kills both mice in 48 hours is taken to be the minimum lethal dose, and to measure the virulence of the organism. The reaction from the dilutions with a common ratio of 1:10 are more sharply defined than those from a larger ratio as 1:2 or 1:4. The reaction from saline dilution is more rapid than from a broth dilution, as the former is absorbed more readily. The method used to keep control, when the virulence of an organism is raised by passage, is essentially the same as that described for estimating it. A mixture of 1 per cent citrate and some of the heart's blood of the mouse which died within 48 hours from the smallest dose in the series, is cultured on egg media, incubated overnight and then used to inoculate broth culture for the next passage. In this way the virulence of the pneumococcus may be raised to a minimum lethal dose of 1/10,000 c.c. The titer can be maintained constant at any value desired over a prolonged period of time by fortnightly transference from egg to broth, to mouse and back to broth; a single passage being enough to restore the waning virulence. —J. F. Gaskell, *J. Path. and Bact. (British)*, 27:253 (July), 1924. L. W. G.

Concentration of Diphtheria Toxin.—The method consists of the collection of the nitrogenous material precipitated by glacial acetic acid from the well-cooled filtrate of the bacillus. The precipitate is collected by centrifugation. The technic for the formation, separation, and removal of the precipitate is minutely detailed. The author indicates the effect of the varying amounts of glacial acetic acid added to the filtrate, the effect of the temperature of precipitation on the yield, and the nitrogen content of the precipitates.—A. F. Watson and A. Wallace, *J. Path. and Bact.*, 27:289 (July), 1924. L. W. G.

Clostridium Putrificum—III.—A comparison of strains obtained from collections in this country and abroad. The author collected nine different strains of C. Putrificum and classified them by their morphological, cultural and biochemical characteristics. Two distinct groups were found; one which had round terminal spores, digested protein slowly and did not ferment any sugar. The second group had oval subterminal spores, digested protein rapidly and fermented various sugars with production of acid and gas. The first group corresponded to the original organism described by Bienstock and should, therefore, be taken as C. Putrificum, while group II should be discarded.—Geo. Reddish, *J. Bact.*, 9:321 (July), 1924. E. S.

NOTE: Each month we desire to publish in the LABORATORY NOTES two or three short articles (not exceeding 250 words) dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the fifteenth of each month.—C. C. YOUNG.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Mortality in New York State in 1923.—Provisional data issued by the New York State Department of Health for the year 1923 show a slight increase over the previous year in the mortality rate for New York State, exclusive of New York City. During 1922 the rate was 14.4 per 1,000 population, while the rate for 1923 was 14.8. The rate for the five year period, 1917-1921, was 15.8. If this rate had prevailed during 1923 there would have been 4,710 more deaths than actually occurred.

The increase in the 1923 death rate over that of 1922 was due in large measure to the greater mortality in cancer, organic heart disease, nephritis, automobile accidents, tuberculosis and the acute respiratory diseases including pneumonia, measles, whooping cough and influenza. The mortality rates for these diseases were 7.9 in 1923, 7.4 in 1922 and 8.6 in 1917-1921.

On the other hand, there were decreases for 1923 in the mortality rates for typhoid fever, scarlet fever, diphtheria and diarrhea under 2 years of age amounting to a total of .2 per 1,000. The most gratifying changes in the 1923 rates as compared with those of the 1917-1921 period were a reduction in the typhoid death rate amounting to 41.9 per cent; 38.2 per cent reduction in diphtheria death rate; 66.4 per cent for influenza; 24.3 per cent for pneumonia; 37.4 per cent for diarrhea under 2 years of age; 13.2 per cent in infant mortality and 21 per cent for whooping cough. The increase in the mortality rates for automobile accidents amounted to 60.6 per cent; heart disease 17.9 per cent; cancer 13.3 per cent and measles 26.9 per cent.—New York State Dept. of Health *News Letter* No. 115.

Communicable Diseases in Illinois.—The total number of cases of communicable diseases reported in Illinois for the first six months of 1924 was 87,951 or 31,940 below the total for the corresponding period in 1923, and lower than the total for 1922 and 1921. Typhoid fever incidence exceeded that for 1923 by 100 cases; but smallpox was lower by 99 cases. Measles fell off from 41,489 to 17,554; scarlet fever jumped from 5,663 to 7,191; whooping cough declined from 6,224 to 3,481, and diphtheria dropped from 5,756 to 3,887, while the reported diphtheria carriers increased from 1,906 to 2,033. Very sharp declines were recorded in the prevalence of both influenza and pneumonia, the former falling from 6,926 reported cases to 753 and the latter from 14,054 to 9,157. The venereal

disease cases reported increased from a total of 12,902 to 15,115.—Illinois Department of Health *News Notes*, July 19, 1924.

The Suicide Record of 1923.—The suicide rate for eighty cities remains the same for 1923 as for 1922—15.2 per 100,000 population. The rate increased in thirty-four cities, while it decreased in forty-six. In a large measure the stationary condition of the suicide rate reflects the nation-wide prosperity enjoyed by all classes of the population. San Diego had the highest rate in 1923 as well as in 1922, the 1923 rate being 50.5 and the 1922 rate 47.8. Of the thirteen cities with high suicide rates or rates of twenty and over, eight are located on the Pacific coast. The cities of the lake region show, almost throughout, rather low rates of suicidal frequency, and five principal cities, Chicago, Buffalo, Cleveland, Detroit and Milwaukee, all have rates below the average. For eastern cities, Boston had a rate of 16.4, Manhattan and Bronx 16.3, Philadelphia 14.4 and Washington 14.4. Combining the returns for one hundred cities since 1900, excepting for the last three years when a slightly smaller population has been considered, it is seen that the rate reached a maximum of 21.5 in 1908 and a minimum of 12.3 in 1920. The conclusion would seem to be justified that the tendency to self murder has approached a fairly stationary condition.—F. L. Hoffman, *Spectator*, 113:3, 8-10 (July 17), 1924.

Vital Statistics, France.—The number of births for the first quarter of 1924 was 195,000 as compared with 196,105 for the first quarter of 1923. The deaths numbered 219,045 for this period of 1924 as compared with 200,836 in 1923. Marriages are increasing, there being 77,088 for the first three months of 1924 and 70,656 for this period in 1923.—*Jour. A. M. A.*, 83:454 (August 9), 1924.

The Health of London in 1923.—The year 1923 was remarkable for the lowest death rate and lowest infant mortality rate ever recorded in London. The civil population is estimated at 4,564,109 and the non-civil at 6,000. The birth rate was 20.1, the death rate 11.4, and the infant mortality rate 61. The death rates from tuberculosis and cancer were 1.2 and 1.4 per 1,000 population respectively. In the course of 80 years the Londoner's expectation of life has been extended from 34.6 years to 53.8 years for males, and from 38.3 years to 59.1 years for females. The death rate from cancer in London is shown to be slightly higher than that for England and Wales as a whole. The ratio of the male to the female rate, which in 1850-1852 was 100 to 195 is now 100 to 83. The death rate from puerperal sepsis per 1,000 births was 1.4, about the same as that for England and Wales during the two previous years. There were but 11 cases of smallpox and one death.—*Lancet*, 2:136-137 (July 19), 1924.

Public Health in Scotland 1923.—The death rate in Scotland was the lowest on record, 12.9 per 1,000, the lowest previous record being 13.6 per 1,000 in 1921. The infant mortality rate of 78.9 was also the lowest on record, the 1922 rate having been 101.4. The 1915 rate was 126.5. Slowly but steadily the mortality from tuberculosis is lessening. In 1894 the death rate in Scotland from pulmonary tuberculosis was 172 per 100,000; in 1914 it was 104, and in 1923, 81. Scotland now has a lower death rate than England and Ireland for pulmonary tuberculosis; but the rate from non-pulmonary tuberculosis is higher, although it has fallen 38 per cent since 1914.—*Lancet*, 2:142 (July 19), 1924.

Scottish Vital Statistics.—The birth rate in Scotland for the first quarter of 1924 was 22.7, or 0.7 more than that of the previous quarter but less than that of the first quarter of last year and less than those of the first quarters of previous years. The marriage rate of 6.0 is the lowest since that for the first quarter of 1912. The death rate, 18.1, is 5.1 more than that of the previous quarter and 3.5 more than that of the first quarter of last year. The rise in the death rate was associated with an increased number of deaths from influenza, and an increased number from pneumonia and bronchitis. The infantile mortality rate was 132, showing a marked increase over the rate of the previous quarter, 76, and also over that of the first quarter of 1923, 98. The death rate from malignant disease continues to increase, the quarterly rate being 138 per 100,000. The death rates from all forms of tuberculosis and from pulmonary tuberculosis were 129 and 91 per 100,000 respectively. The rate from pulmonary tuberculosis is 15 more than in the previous quarter, but one less than that of the first quarter last year.—*Med. Off.*, 32:52 (August 2), 1924.

Public Health in the Punjab, 1922.—The population of the Punjab, according to the census of 1921 was 20,517,606. The health of the province was exceptionally good. The birth rate was 39.3 as compared with 41.5 in 1921 and 40.0 in the preceding quinquennium. This rate was higher than for any province in India. The general death rate was 22.1 per 1,000, a considerable improvement on the ratios for the preceding year, 30.1, and for the quinquennium, 39.2. The infant mortality rate decreased from 195.8 in 1921 and 211.23 for the previous five years to 161.35 in 1922. The death rate for cholera was .01 per 1,000 as compared with .94 in 1921, and the smallpox mortality fell from .22 in the previous year to .08 in 1922. Plague mortality, however, increased somewhat.—*Lancet*, 2:255, 256 (August 2), 1924.

Public Health in Bihar and Orissa 1922.—The year 1922 was a very prosperous and healthy one for Bihar and Orissa and was especially characterized by the absence of any important epidemic disease. The death rate was 24.1 per 1,000 as compared with 32.8 in 1921 and 39.6 for the preceding five years. The population as reported for 1921 was 34,002,189 (not including the tributary states of Orissa). The birth rate was 35.0 per 1,000 compared with 34.6 in 1921 and 38.4 in the preceding decennium. The infant mortality was 139.9 as compared with 159.0 in 1921; in the towns it was 165.9 and in the rural areas 139.1. Fevers took a high toll, the rate being 17.0 per 1,000 as compared with 22.6 in 1921.—*Lancet*, 2:100 (July 12), 1924.

Effect of War Losses on Mortality, Germany.—The age group 20-25 presents throughout the war the highest mortality, and whereas the mortality of that age group in 1913 was only 4.4 per 1,000 males of the same age, it rose in 1915 to 66.9 which is the maximal figure for that period of life. During the two following years, the rate was diminished, but rose again to 58.8 in 1918, the year of the influenza epidemic. Among females of the 20-25 age group, the increase in mortality did not begin until 1917, when the scarcity of food and other supplies was approaching the climax. The fall in the mortality rate after the war was brought about very slowly, since the later influenza epidemics of 1919 and 1920, together with the marked increase of puerperal fever (following miscarriages) served as a check. The 25-30 age group shows much smaller war losses, the maximal mortality being 45.7 in 1915. This group was the hardest hit by the influenza epidemic, the mortality rate being 12.7 in 1918. Approach to pre-war mortality rates began in 1921. The mortality of the 30-35 group moved about the same as that of the 25-30 group, except that the mortality was about the same in 1915 as in 1918. By 1921 the pre-war rate had been reached. In the 35-40 group the 1913 rate was 6.4, and the maximum rate, that of 1918 was 25.0—*Jour. A. M. A.*, 83:285 (July 26), 1924.

Mortality from Diabetes, Roumania.—The death rate from diabetes has been increasing in recent years in Roumania. In 1922, the rate was 6 per 100,000. On an average only 4.5 deaths per 100,000 were caused by diabetes in 1900 to 1910, but nearly 6 in 1921. The seeming increase may be due to the increase in luxury or to more accurate diagnosis. Persons engaged in the preparation and sale of foodstuffs and liquors, soldiers, and men belonging to the civil and ecclesiastical services had a relatively higher death rate from diabetes than other classes of the population.—*Jour. A. M. A.*, 83:371 (August 2), 1924.

Public Health in Capetown, 1923.—The estimated European population in Capetown for 1923 was 107,430 and that of the non-European 83,590. The birth rate of the European population was 22.3, the death rate 11.1, the infant mortality 82 and the maternal mortality 4.6. These figures do not differ greatly from those of an English town. The non-European rates, however, are much higher, the birth rate being 51.5, the death rate 29.2 and the infant mortality rate 200. The maternal mortality rate was the same as that of the Europeans, 4.6, while the cancer rate, 0.5 per 1,000, was lower, the European rate being 0.7.—*Lancet*, 2:150 (July 19), 1924.

Child Health in Hungary 1923.—The infant mortality rate of Hungary as a whole for 1923 was 186, while for cities with health stations the rate was only 162, a difference of 24 per 1,000. In 1922 the infant mortality rate was 200. The 1923 figures, therefore, represent a general reduction of 14, and a reduction of 38 in the cities where the child health stations are working. Seventeen per cent of the new born population were reached by these stations.—*Child Health Magazine*, 5:293 (July), 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Metropolitan District Plans in Maryland.—Careful studies of local problems indicated many small communities struggling with inadequate and often polluted water supplies with no provision of any kind for the disposal of domestic wastes. As virtually all were in a continual struggle for financial existence, the only solution lay in the development of sanitary or metropolitan districts. The population in Maryland, exclusive of Baltimore City, now under unified or metropolitan management for water supply, sewerage, storm-water drainage and refuse disposal systems totals 100,000. In the Washington Suburban Sanitary District it has been possible to furnish to average property, water and sewerage facilities during the past five years at a total annual cost of $21 to $26.—Abel Wolman, *Pub. Works*, 55:242 (Aug.), 1924.

An Analysis of Garbage Disposal.—The present unsatisfactory method of garbage disposal of New Trier Township in Illinois, together with an outline of existing methods of disposal and their application to this township, are discussed. Estimates of cost of disposal at a single plant showed the following relative costs per net ton: by incineration $5.10; burial $1.94; hog feeding, 76 cents profit; Becarri System, 35 cents.—Samuel A. Greeley, *Am. City*, 31:104 (Aug.), 1924.

Sanitation on the Catskill Watersheds.—Communities on the watershed are gradually withdrawing their opposition to the improvements necessary to protect the water supply of New York City, and are accepting the enabling act which permits the city to install and operate sewers and sewage and treatment plants in the communities.—Thaddeus Merriman, *Am. City*, 31:119 (Aug.), 1924.

City Folk Safer from Typhoid at Home.—Seventy-two cases of typhoid fever and four deaths (up to July 20) in a few weeks in New York City alone, attributed to drinking polluted water in Palisades International Park, is an unfortunate but striking example of the danger of the countryside to campers, trampers and automobilists. "People must learn to protect themselves by using discretion as to what to eat and drink on their outings."—*Eng. News Rec.*, 93:126 (July 24), 1924.

Cleaning Filter Sand.—Salem, N. J., employs a new method, using caustic soda and soda-ash for cleaning badly clogged filters. The method is less expensive than removing and cleaning sand and yields as good, if not better, results.—C. H. Capen, *Pub. Works*, 55:216 (July), 1924.

Water Purification by Aeration.—The action taking place during aeration of water is described. Operation and results of aeration at Watertown, N. J., West Palm Beach, Fla., Danville, Va., Long Beach, L. I., Poughkeepsie and Albany, N. Y., show that aeration is very useful in water purification, but the results obtained vary according to the kinds and amounts of impurities in the water. —Malcolm Pirnie, *Pub. Works*, 55:251 (Aug.), 1924.

Dewatering Activated Sludge.—Apparatus and methods employed in the United States and results obtained in operating and test plants are discussed.—Langdon Pearse, *Pub. Works*, 55:262 (Aug.), 1924.

Producing Artificial Ground Water at Frankfort, Germany.—In 1908, to increase the flow of ground water, an experimental augmentation plant was constructed. Located about 1,600 feet from the ground water pumping station, the plant was supplied with raw water from the Main River which is badly polluted with sewage and industrial wastes. The water passes through a scrubber onto open slow sand filters from which it passes to the exfiltration gallery situated 10 feet below the surface of the ground. Changes in quality were noted, and results indicate that polluted water becomes a good ground water by the time it reaches the well, 190 days after exfiltration. An operating plant constructed in 1921 has raised the ground water level 6.5 feet.—Dr. Scheelhaase and Gordon M. Fair, *Eng. News Rec.*, 93:174 (July 31), 1924.

Chlorination of Small Water Supplies.—Observation of plants requiring chlorine at the rate of 5 lbs. or less per 24 hours, indicated greater difficulties than the operation of larger apparatus, due to location and character of attention. To produce the same reliable treatment to small supplies as obtained at large installations, a new apparatus, the chlorometer, has been developed. Operation of the chlorometer which uses sodium hypochlorite is described. It is particularly useful for such applications as camps, hotels, institutions, boats, swimming pools, etc.—M. F. Tiernan, *Canadian Eng.*, 47:201 (July 29), 1924.

Garbage Incinerators in New York City.—The largest incinerator in the country was placed in operation in New York. It is of the Deane type and has a capacity of 210 tons of garbage and 90 tons of rubbish per 24 hours.—*Pub. Works*, 55:265 (Aug.), 1924.

Second Water Purification Works for Oklahoma City.—The old filtration plant, built in 1906 was antiquated and beyond redemption, and was replaced by a new 16 m.g.d. plant consisting of: primary aerator, primary mixing chamber, coagulation basins, secondary mixing chamber, filters, 1 m.g. clear well, secondary aerator and 2.5 m.g. clear well.—*Eng. News Rec.*, 93:216 (Aug. 7), 1924.

Garbage Collection and Disposal in a Hundred Manager Cities.—A summary is given of collection and disposal in 100 cities operating under city manager plan.—*Eng. News Rec.*, 93:188 (July 31), 1924.

First International Sanitary Engineering Conference.—A review is given of water supply, sewerage, refuse disposal, plumbing and health administration papers which were presented at the conference held in London, July 7 to 10, 1924.—Harrison P. Eddy, *Eng. News-Rec.*, 93:342 (Aug. 28), 1924.

Abstracts by A. W. B.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

Heart Disease in Industry.—A study was recently made of eighty industrial workers from a cardiac clinic of the Massachusetts General Hospital by Miriam Lincoln, who has seen heart patients doing successful work in many different occupations, ranging from light clerical work to heavy manual labor. She believes that such cases are not injured when their work is properly selected, and when work hours and recreation are kept within the boundaries in which symptoms appear. Industry can well find a place for such persons. These statements apply only to those cases in which compensation has not failed. P. D. White is of the opinion that no case of heart disease is industrial. Frequently the best test of how much the patient can do without detriment is an attempt at the job itself.—Editorial, *Jour. A. M. A.*, 83, No. 2:125 (July 12), 1924.

Industrial Health Service.—The author outlines the object of employe health service under four main headings under which industrial medical work can be grouped: physical examinations, treatment of accidents, prevention of sickness (treatment of sickness in its minor form with the idea of prevention), and sanitation and hygiene of the plant. After the employment department has passed favorably upon an applicant, he is referred to the medical department for examination to determine his fitness for the job indicated by the employment manager. The particular object of this examination, however, is that there may be a definite written record of the man's physical condition when he first entered the employ of the company, which remains as a sort of foundation for all the medical work which will be done with that particular individual over a period of years. Men working at hazardous jobs should be reexamined at regular intervals to see that the particular hazard is causing no physical deterioration. The industrial physician should at least be in his plant once a day; should review the working conditions of the men, and actually see that there is proper light and ventilation, and

wherever there is a special hazard, that that special hazard is being properly taken care of. In the experience of the Norton Company of Worcester, each employe comes to the hospital on an average of about two and one-half times per year. For illness the men come to the hospital at the rate of 851 per 1,000. Industrial accidents run 1,593 per 1,000 or one and one-half per man per year.—W. L. Clark, Jr., *Hosp. Management*, 18, No. 1:64 (July), 1924.

Medical Supervision in Industry.—Since industrial processes have become so varied, resulting in the use of many new materials, and since the introduction of new types of machinery, the enormous increase in the number and degree of hazards to the workers' health have resulted in cases of disease and injury which are recognized as a proper charge against industry. At present there are only six states which have no laws for the compensation of such cases. Whereas the earlier industrial physician concerned himself solely with the cure of disease and injury, the modern concept of his duty is prevention. Preventive work results in: (1) decrease in the number and length of absences due to injury or illness; (2) decreased turnover in factory labor; (3) increased earnings for the worker and increased production for the employer. The physician who spends all of his time in the dispensary waiting for accident and illness cases will be of little value to his firm. He should spend enough time in the factory among the workers to fully acquaint himself with processes and working conditions. The author believes that the properly qualified industrial physician might well become the directing head of plant welfare activities, such as employment, safety, recreation, housing, education and community sanitation. It is pointed out how the plant doctor's work may supplement that of the private physician so that instead of antagonism there may be coöperation. The industrial physician must remember that he occupies a neutral position in any controversy that may arise between employer and employe.—Frank L. Rector, *Hygeia*, 2, No. 6:361 (June), 1924.

Oxygen Breathing Apparatus.—A very complete and interesting handbook describing the construction and operation of the four generally used self-contained mine rescue oxygen breathing apparatus has lately been issued by the U. S. Bureau of Mines. Such apparatus is carried entirely by the wearer, and contains its own supply of oxygen; so that rescue and fire fighting crews can enter mine atmospheres after an explosion or fire, no matter how much oxygen such atmosphere has lost or how great an amount of poisonous gases is present. The four makes of apparatus described are known as the Gibbs, Paul, Fleuss-Proto, and the Draeger, any one of which will supply the wearer with good air for at least two hours, no matter how bad the surrounding air may be. Many improvements resulting from experience have increased the safety and efficiency of the apparatus. In some states, notably Utah and Washington, mining codes require rescue apparatus to be part of the equipment at mines of a certain size and character. State mine rescue stations have been established by Illinois, Ohio, Kansas, and West Virginia. Many large progressive mining companies now maintain regularly trained rescue corps of five or more men, each equipped with the necessary apparatus. Some companies have established joint rescue stations and four states maintain such stations.—Parker, McCaa and Denny, *Self-Contained Mine Rescue Oxygen Breathing Apparatus*, A Handbook for Miners, U. S. Bur. of Mines, 1923.

Rubber Dermatitis.—In a Cambridge (Mass.) rubber factory an outbreak of dermatitis was caused by the use of hexamethylenamin as an accelerator. Sixty employes were affected, and only the removal of the chemical from all rubber stock prevented further cases. The molding of heels in hot hydraulic presses where hot fumes were emitted produced the worst cases. Remedies were effective only when the cases remained away from the hexamethylenamin. Artificial ventilation, as well as the many other preventive measures which were tried out, was unsuccessful. Symptoms were redness of the face and exposed parts of the arms, followed by fine, watery, itchy vesicles and later edema. Extreme itching was the principal symptom complained of. Infection resulted in many cases.—H. J. Kronin, *Jour. A. M. A.*, 83, No. 4:250 (July 26), 1924.

Shifting of Occupations.—In order to study the extent of the shifting of occupations in the life of a worker, a tabulation was made of the records of 4,198 industrial policy-holders

by the Metropolitan Life Insurance Company. Such a tabulation is valuable in that it will indicate to some extent whether men are likely to shift their occupations if their initial employment exposes them to such hazards as excessive heat, dusts, poisonous gases, or to arduous labor; also whether the skill required plays any part in determining the continuity of such employment. Owing to the fact that the study was based on two records only, namely, the occupation at the time of issuance of the policy and that at the death of the policy-holder the value of the investigation is somewhat marred. Results showed that only 41.5 per cent were found in the same occupation at death as at the issuance of the insurance. A higher proportion, namely, 57.3 per cent, remained in the same industry, although not necesarily in the same occupation. The proportions remaining in the same occupation varied, of course, with the several occupations, ranging from the minimum of 23.7 per cent for saloon keepers and bartenders, to a maximum of 74.6 per cent for tailors.

With the exception of two groups, namely, miners and railroad track and yard workers, the most important factor determining the proportion of workers remaining in an occupation between the date of issuance of the insurance and the date of death is the degree of skill required by the occupation, that is, the greater the degree of skill required, the higher the proportion of constancy in that occupation.

Although it is difficult to demonstrate in so limited a study that much shifting of occupations is due to weakened conditions of the workers brought about by arduous labor, exposure to dusts, fumes, poisons, etc., there is an indication of the operation of such factors in a few occupations. Thus, in the case of painters, who, because of the considerable degree of skill required would be expected to show constancy in occupation, only 50.5 per cent remained painters. "It is possible that the explanation of this comparatively low proportion lies in the fact that these men had been poisoned by lead, which made it necessary for them to accept some other occupation."—Louis I. Dublin and Robert J. Vane, Jr., *Monthly Labor Review*, 18, No. 4:34 (April), 1924.

FOOD AND DRUGS

C. L. ALSBERG, M.D., AND D. B. DILL

Improvement in Nutrition.—An initial diet consisting of a mixture of one-sixth whole milk powder, five-sixths ground whole wheat and NaCl to the extent of 2 per cent of the weight of the wheat, was adequate in that it supported growth, reproduction, and successful suckling of young for generation after generation. It was found that doubling the proportion of milk "resulted in the following evidences of improved nutrition: more rapid growth, particularly as measured by the gain in weight during the period following weaning; more efficient growth during the same period as shown by greater gain in weight per 1,000 calories of food consumed; somewhat larger average sizes at all ages; earlier maturity as shown by age of females at birth of their first young; longer duration of reproductive life, old age being deferred in the same individuals in which earlier maturity has been induced; greater success in the rearing of young, as shown by increase both in numbers and percentage of young reared and decrease in percentage of females failing to bear and rear young; better growth of young during the suckling period as shown by larger average weight at the uniform weaning age adopted. The better of the two diets considered is probably capable of further improvement. Evidently there is not only a line to be drawn, but a wide zone to be explored between adequate and optimum nutrition."—H. C. Sherman and H. L. Campbell, *J. Biol. Chem.*, 60, 5-15, 1924.

Urea as a Protein Substitute in Milk.—Quite divergent views of the availability of urea as a source of nitrogen have been expressed in recent German publications. In this investigation it was found that when urea is added to a diet consisting chiefly of hay and straw, it does not spare protein, nor does it favorably affect milk production or digestibility of the ration for cows. When the diet contains more easily digestible car-

hydrates, it is able to replace 30 to 40 per cent of the protein without impairing milk production. It is considered likely that protein is synthesized from urea in the bacterial digestion which takes place in the rumen of ruminants and that the bacteria are in part killed and digested further along in the digestive tract.—F. Honcamp, St. Koudela and E. Müller, *Biochem. Z.*, 143, 111-55, 1923.

Influence of Diet and Management of the Cow.—Experiments on calcium and phosphorus retention in young growing rats were used to investigate the powers of various samples of milk to influence calcium deposition. The milk was fed to the rats in daily rations of 5 c.c., and was added to a basal diet arranged to be complete in all respects except for deficiency in fat-soluble vitamins. Milk was investigated from cows cared for in the following ways: (1) after six months on a diet of dry fodder in a dark stall, (2) after two months on a diet of green food in a dark stall, and (3) after three months on pasture in summer. Rats receiving milk from (1) and (2) showed defective calcium retention as compared with control rats on the same basal diet, supplemented with cod liver oil and an equivalent ration of dried milk. The retention of phosphorus was also affected, but to a less degree. Rats receiving samples from (3) showed no significant difference in calcium retention as compared with controls. "The influence of cod liver oil upon calcium deposition is not to be attributed to specific properties peculiar to that substance, but to its high content of fat-soluble vitamins, as a similar effect upon calcium deposition can be demonstrated with cow milk, the degree depending on the diet of the cow and the amount of sunlight to which she is exposed."—M. A. Boas and Harriette Chick, *Biochem. J.*, 18, 433-47. *Chem. Absts.*, 18, 2191, 1924.

Greater Care in Packing Necessary.—The recent press release in regard to salmon seizures from the Office of the Secretary of Agriculture is reviewed. In this release it was pointed out that several recent seizures of canned salmon "on the ground that the product consisted in part of decomposed fish . . . resulted in the condemnation of the product by the court as being adulterated in violation of the Federal Food and Drugs Act. . . . The verdict of the jury in each case upheld the main charge of the government which was to the effect that part of the canned salmon was decomposed and was spoiled at the time it was caught." In commenting on this release, the *Pacific Fisherman* points out that actually only a small proportion of the total salmon pack is involved in these seizures. Arrangements are being made to watch more closely the fish as they are received by the cannery. Nearly all the Alaska canneries plan on placing identification marks on their cans, so that those packed at any time or under any particular conditions can be segregated. Other precautions are being observed to lessen the chance of canning bad fish. The Seattle Station of the Bureau of Chemistry is making an extremely thorough examination of the pack passing through that territory with the hope that if any seizures are necessary, they can be made there rather than in Eastern markets.

Potency of Commercial Vitamin Preparations.—Of the commercial vitamins tested, 40 per cent were useless, 25 per cent were inferior, 20 per cent were equal, and 15 per cent were superior in their vitamin potency when fed to white rats in comparison with dried brewer's yeast of good quality. Fillers and various drugs were found in some of them.—E. M. Bailey, H. C. Cannon, and H. J. Fisher. *Reprint Conn. Agr. Expt. Sta. Bull.* 240. *Chem. Absts.*, 18, 2023, 1924.

CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Communicable Diseases Among Children.—In the course of studies in child hygiene by officers of the United States Public Health Service during the period 1916-1919, information was secured regarding the previous history of an attack of a communicable disease in the case of each child examined. Records were obtained for 31,353 white school children from 5 to 19 years of age, the greater part of whom were of native-born parentage.

It was found for the ages studied that the maximum incidence of measles was at 6 to 7 years of age; whooping cough 5 to 6 years; mumps 7 to 9 years; chicken pox 5 to 6 years; scarlet fever 8 to 10 years; and diphtheria 5 to 7 years.

As the age increases, within the limits of those included in this study, the annual incidence rapidly declines; so that by the time the adult age is reached about 89 per cent of the children have had measles; 78 per cent whooping cough; 65 per cent mumps; 12 per cent scarlet fever; and 9 per cent diphtheria.

Measles, whooping cough, chicken pox and scarlet fever are indicated by this study as being more prevalent among girls than among boys. On the other hand, the rates for mumps and diphtheria are about the same for the two sexes.

In a comparison of disease incidence of native-born white children with that of 2,292 children of foreign-born or mixed parentage from 6 to 16 years of age, from whom information was obtained, it appears that measles, whooping cough, mumps and chicken pox are more prevalent among the native-white than among the children of foreign-born parents. The rates for scarlet fever and diphtheria are about the same for the two groups.

Information was also obtained on 2,777 negro children from 6 to 16 years of age. These data seem to indicate that measles, chicken pox, scarlet fever and diphtheria are more prevalent among the white than among the negro children; the rate for mumps is possibly higher among the negroes; and whooping cough seems to be about the same for both groups.—Selwyn D. Collins, *Public Health Reports*, June 27, 1924.

Susceptibility after Tonsillectomy.—Surveys and the examination of 5,000 white school children in a school population of more than 25,000, show that the percentages of children having had the tonsils removed varies from approximately 7 per cent at 5 and 6 years of age, to 19 per cent at the ages of 13 and 14, in the sections of the city included in the surveys.

The study of a consecutive series of 224 cases of diphtheria of school age living in the same area of the city, shows that about 2 children (0.9%) had had tonsillectomy performed, a much smaller number than would be expected in a sample of this size and age distribution selected at random from the school population.

In a sample of 193 cases of scarlet fever of school age, 19 (9.8%) had had the tonsils removed prior to the attack, a number not significantly different from that expected from a random sample of the school population similarly constituted.

As a result of these observations it is concluded that in the area studied the children who have their tonsils removed are distinctly less liable to diphtheria than those who have not; whereas in scarlet fever no significant difference is shown. "General conclusions as to the relationship which tonsillectomy bears to either of these infections, diphtheria or scarlet fever, require more observations in other localities."—James A. Doull, *Public Health Reports*, August 1, 1924.

Morbidity and Mortality in Negro Infants.—More than one-fourth of all negro children born alive die before 5 years of age. Among the outstanding causes of infant mortality in negro infants are: prematurity, tuberculosis, syphilis and secondary pneumonia. In the registration area, deaths from syphilis and tuberculosis are each four times as frequent in the negro as in the white, and from pneumonia, 2.3 times as many. The three diseases—syphilis, tuberculosis and pneumonia—account for 29 per cent of all infant deaths among negro children, and only 7 per cent among white children.—J. H. Mason Knox, M.D., *Jour. A. M. A.*, August 2, 1924.

The Prevention of Scarlet Fever.—The first cases of experimental scarlet fever were reported on October 6, 1923. These cases were produced by inoculation of a special strain of hemolytic streptococcus. Since the hemolytic streptococcus is found in the throat and is not usually present in the blood, it is evident that the rash is not produced by the direct action of the streptococcus on the skin. It was found that the streptococcus produces a soluble toxin which, absorbed into the blood causes nausea, vomiting, and rash.

The discovery of this toxin offered a scientific basis for: (1) the development of a skin test for susceptibility to scarlet fever; (2) preventive immunization, and (3) the production of an anti-toxin.

When small amounts of this toxin are injected into susceptible persons, they may develop general malaise, nausea, vomiting, fever and a scarlatinal rash. These symptoms appear within a few hours after injection, and disappear within 48 hours, following which the skin test is negative or only slightly positive.

By beginning with a smaller dose of toxin, it is possible to immunize susceptible persons without this severe action. Adults are immunized by three injections of toxin at five day intervals, beginning with a first dose equivalent to 300 skin test doses, and increasing to 1,000 skin test doses. The first change that appears in the skin test during the course of immunization is more rapid fading, and within a week after the last dose of toxin is given, it becomes entirely negative.

In cases of definite exposure, skin tests are made as soon as possible, and in positive cases a throat culture is made. If the culture shows no hemolytic streptococci, active immunization is carried out with three doses of toxin. If the hemolytic streptococci are present, passive immunization is practiced by using an injection of convalescent scarlet fever serum.

In a series of 125 persons exposed to scarlet fever, 52 of whom were children, 63 showed negative skin tests and received no further treatment. Of the 62 who had positive skin tests, 52 were immunized with toxin. Ten others who had positive skin tests and hemolytic streptococci in their throats, received convalescent serum. Of these latter cases 5 already had sore throat and fever at the time they received the serum. None of these 125 persons exposed to scarlet fever developed the disease, while among 32 controls for whom skin tests were not made and 2 nurses with positive skin tests who were exposed to scarlet fever before immunization was completed, the 2 nurses and 5 other controls contracted scarlet fever.—George F. Dick and Gladys Henry Dick, *Jour. A. M. A.*, July 12, 1924.

Recreation Congress.—The Eleventh National Recreation Congress called by the Playground and Recreation Association of America, will convene at Atlantic City, N. J., October 16-21, 1924.

The eighteen years progress of the public recreation movement will be reviewed and group conferences will be held on:

1. City Planning Aspects of Recreation
2. Community Buildings
3. Swimming Pools
4. Playground Equipment
5. Play Material
6. Recreation Life for Girls
7. Finding and Training Leaders
8. Camping
9. Park Recreation
10. Neighborhood Life
11. Physical Efficiency
12. Rural Recreation Progress
13. Financing Community Recreation.

Special Notice, American Playground and Recreation Association, July 22, 1924.

Commercial Production of Human Milk.—The output from the Bureau of Wetnurses in Detroit during the last eight years has been 414,242 ounces of human milk, approximately 13,808 quarts. In 1916 the milk was produced at a cost of 21 cents an ounce, while in 1923 it cost only 15 cents an ounce.

The cost of production includes the amount paid to the mother, which is a flat rate of 10 cents an ounce plus the cost of carfare. The expense of operation comes largely from private patients and from institutions; the total revenue for 1923 was $9,388.36.

Of the milk produced 18,318 ounces was sold to private patients at 39 cents an ounce; it was sold in other quantities at 25, 20, 15, 10 and 8 cents an ounce, while 6,654 ounces was given to private patients too poor to pay.

The Bureau keeps a sufficient number of producing mothers on its payroll to supply more than enough to cover its needs for private cases. This excess each twenty-four hours is distributed free of charge to hospitals

caring for sick and premature infants.—B. Raymond Hoobler, M.D., *Jour. A. M. A.*, August 2, 1924, page 382.

Absenteeism Because of Sickness.—In a previous paper (Absenteeism Among White and Negro School Children in Cleveland, 1922-23, *Reprint 908 Public Health Reports* June 6, 1924) the general results of a study of absenteeism among school children were presented. This study included 1,611 pupils with a total possible school attendance of 214,256 days. By including absences of two days duration or over, it was found that 6,362 days of school were lost because of sickness. Among the points brought out were the following:

1. Negro children irrespective of sex and age lost less time from school than white children because of sickness.

2. There was indicated a slight tendency for girls to lose more time from school than boys because of sickness.

3. The older age group (10-14) lost less time from school than the younger age group (5-9) because of sickness.

In an analysis of the time lost because of sickness, use was made of case rates, expressed as the number of cases per 10,000 possible days of school attendance, rather than by relating the cases to the number of persons exposed. The results obtained for the group studied by the use of the case rate method are as follows:

1. Negro children had a lower general morbidity rate and lower specific morbidity rates for most causes of sickness than the white children.

2. The average duration of cases of sickness measured by days of school lost was approximately the same for both white and negro children (6.18 ± 0.15 school days for white children and 5.98 ± 0.22 for negro children).

3. The percentage of cases known to be attended by a regular physician was greater among the white than among the negro children.

4. As between boys and girls, there was no significant difference in the average duration of cases of sickness, but girls experienced a slightly higher general morbidity rate than boys.

5. The older group (10-14) experienced not only a much lower general morbidity rate than was true for the younger age group (5-9), but also a significantly shorter average duration per case.

6. Respiratory infections and measles were the two most important causes of absence from school due to sickness.

7. Scarlet fever caused longer absences than any other disease, and was more often attended by a regular physician. In these respects it was followed, in the order named, by measles, chicken pox, diseases of the tonsils, and diseases of the digestive system.—G. E. Harmon and G. E. Whitman, *Public Health Report*, June 6, 1924.

Inflammation of the Middle Ear.—Based on observations of 205 cases of otitis media, occurring in 613 consecutive hospital admissions, it was found that:

1. In 613 admissions, 33.4 per cent of the children either had otitis media when they came or developed it while in the hospital.

2. The race and sex of the patient seemed to have no relation to the incidence of the disease.

3. There was a definite seasonal variation. In February, 47.3 per cent of the patients had otitis media; in July only 23.6 per cent of the children were attacked.

4. The most susceptible period was between the ages of 3 and 15 months. In this group more than 50 per cent of the children had otitis media.

5. Patients with pneumonia, dysentery, nasal diphtheria, pertussis and pyelitis developed otitis media in 50 per cent or more of the cases. Those with the condition of prematurity, nephritis and the noninfectious diseases showed ear infections in less than 21 per cent.

6. Hemolytic streptococci were isolated from the aural discharge in 56 per cent of the fifty cases cultured.

7. The average duration of the disease in 100 cases was twenty-five and one-half days.—David T. Smith, M.D., *Amer. Jour. Dis. of Child.*, Vol. 28, No. 1, July, 1924, page 1.

Clothing and Health.—The reasons for asserting the importance of clothing in matters of health are many, but their explanation is simple.

Body temperature has to be maintained at a constant level and when the balance of loss and gain is upset by disease or other grave, internal conditions, affecting the central controlling centers, fever is produced. For this

reason the climate under the clothes is just as important as that outside. Our bodies need fresh circulating air no less than the lungs, and when extra garments are piled on, as so frequently is the case with children, the result is to hamper nature and waste energy that is needed for other duties.

Not only are young children overclothed, but entirely too frequently their clothing is too tight, unevenly distributed, and unnecessarily heavy. The clothing should be just enough to prevent undue loss of heat under average conditions, and of a nature that puts no strain on the heat regulating centers. It should be light, evenly distributed, and free from all constriction or restriction.

Perhaps no part of the human body is so distorted and tortured as the foot. In selecting a shoe it must be remembered that the natural foot is triangular in shape with the apex at the heel and the broadest part at the fan-spreading toes, and that the inner margin from heel to tip of big toe is perfectly straight. The best form of shoe, therefore, should have a straight inner side and a good width across the broadest part of the toes. The sole must be stout enough to resist water and yet sufficiently supple to allow free bending at the natural hinge of the foot.

The heel in standing bears most of the weight of the body, and in movement it has to withstand the first shock of the advance foot before it is distributed over the arch to the toe. For this reason, it should be broad and flat and firm—never high enough to be unstable and never allowed to wear down on one side.

High heels, especially for children, are injurious. Anything which tends to tilt the foot out of its normal horizontal position must of necessity upset the balance of the whole frame and cause tilting of the pelvis, with a compensatory curving of the spine. A very high heel is insecure, gives a lateral sway which in time is sufficient to stretch the ligaments or even cause sprain and swelling. Furthermore, high heels drive the whole foot forward into the angle of the shoe so that the toes are constantly subjected to a wedged effect, while the weight of the walker is thrust direct on the overcrowded toes. It is not surprising that they kink and overlap, corns and calosities form at the points of mutual pressure.—Hugh A. Fawcett, *The Medical Officer*, May 31, 1924.

Correction of One Physical Defect.—The nurse visited a school. The teacher pointed out a child about eight years old who had enlarged tonsils. The nurse, having given the inspection, and feeling that it was an urgent case, started directly to the child's home, a distance of two miles.

The parents were found to be coöperative, but the nurse learned that there was no family physician, only one the mother had had for herself about a year before in an emergency. The nurse drove ten miles to see the physician to ask him to make the diagnosis. She then drove back the ten miles; got the child and took him to the doctor, another ten miles of driving. By the time the diagnosis had been made, the child returned home, and the nurse back to headquarters, fifty miles had been driven.

An operation having been advised, the surgeon had to be seen and bargained with. He was twenty miles away; it was another twenty miles to get back to the home and instruct the mother as to the preparations of the child before the operation. Then forty miles were covered in taking the child to the hospital and the nurse back to headquarters. Eighty miles were driven that day and forty the next day in bringing the patient back home.—*Virginia Health Bulletin*, April-May, 1924.

HEALTH EDUCATION AND PUBLICITY

EVART G. ROUTZAHN

City Health Department Bulletins.—*Baltimore* pays one cent postage for each copy, using the "permit" privilege by which "1c Paid" is printed on the magazine. The 6 by 9 inch page is folded once with one-half of the last page used for the address, return card, etc. *Chicago* is giving one-third of its cover page to an interest arousing "blurb" or introduction to the chief article of the issue. *New Haven* is using half of the cover page to emphasize in a few words some outstanding idea. *Detroit*, which may have originated the front page "blurb" idea, seems to find more readable type for the purpose than any other city. *New York City* told all about the work of the Division of Exhibits in the "Weekly Bulletin" for July 12.

State Health Department Bulletins.—*North Carolina* reprints every monthly issue in the form of a clip sheet for newspaper editors—20 sheets, single newspaper column, about 16 inches long, including an introductory review of the issue. Illinois usually gives its front and back pages to sketches supplied by Health Cartoon Service or a staff artist. *Connecticut* is running a series of illustrated descriptions of its various bureaus and services. *West Virginia* emphasizes significant articles by boxed statements in the middle of the first page of such articles—but being set wholly in caps they are easy to read. *Wisconsin* is using Health Cartoon Service.

Unofficial Health Agency Bulletins.—*Michigan* Tuberculosis Association (Lansing) is using some stock cuts to enliven its pages. *New York* (city) Heart Association (370 Seventh Avenue) has started a bulletin with type large enough to be read! *Wisconsin* Anti-Tuberculosis Association (Milwaukee) again used the inside page of the prevacation issue of "The Crusader" as a leaflet with subheadings and text so unconventional that you really like to read it. *Milbank Memorial Fund* (49 Wall Street, New York) carries two pages in the July issue illustrating the clever health parade conducted by the Syracuse Health Demonstration. *Massachusetts* Society for Mental Hygiene (5 Joy Street, Boston) continues its readable bulletin, but has not improved it by the addition of matter in small italics inserted in the middle of the text. *National Health Council's* "Monthly Digest" (370 Seventh Avenue, New York City) sticks to its four pages of readable type carrying the significant news of the leading national health agencies. *Junior Committee for the Prevention of Blindness* (130 East 22d Street, New York City) naturally issues an easy to read bulletin. *National Tuberculosis Association* (370 Seventh Avenue, New York City) sends its valuable bulletin free to all interested in anti-tuberculosis work.

What's New This Year?—What new way did you use in telling the world—or any part of it—to be healthy and wise in following health advice or in supporting health work? What new ideas did you use in getting people interested, in getting over your ideas?

Some health workers answered this question in advance of the Boston meeting. But there must be other good ideas kept under cover in different parts of the country. Please send them on so that the JOURNAL may pass them on to others.

What new stunts?

What new graphic ideas?

What new wrinkles in holding meetings?

What new ways of reaching people at fairs?

What new ideas for getting newspaper space?

What new arguments for voters or legislators?

What new kinks of getting literature read?

What new methods for getting your literature distributed?

What new approaches to bigger appropriations to more funds?

What new ways for keeping folks awake while you make a speech?

What else was new in your health education and publicity work?

Who else, do you know, had a new idea or used a new method last year?

The Best Official Mother Book Yet.—Such at least is the first impression of the

editor of this department in turning the pages of the Canadian Mothers Book, written by Helen Macmurchy, M.D., chief of the Division of Child Welfare of the Dominion Department of Health. It is a cheerful book throughout. The expectant mother is not greeted with a reminder of a high infant mortality. In cheery, chatty, practical, sympathetic fashion and in much detail she is told how to prepare for the coming of the baby and how to care for him. The words are mostly short, although, of course, we could never expect a health book to stick closely to the vocabulary of the layman. The photographs used make beautiful illustrations—and they really illustrate the text. The attractive blue cover supplies the reason for the subtitle, "The Little Blue Book—Mother Series No. 1," thus giving the series an easily remembered name by which one mother can tell other mothers about them. The large type and generous spacing go far towards making the book more readable than any similar official publication.—"The Canadian Mothers' Book." 1923. 136 pages (5 x 8 inches). The Deputy Minister, Department of Health, Ottawa.

The Red Cross Museum.—One of the features of a visit to Washington, D. C., may well be a visit to the Red Cross Museum at the national headquarters. Recent additions are described, with 4 illus.—"Additions to the American Red Cross Museum," Irene M. Givenwilson, *Public Health Nurse*, 333:336 (July), 1924.

What Do You Teach About the Fly Menace?—"The sanitarian who thinks for himself, who is unwilling to accept without question dogmas which by reason of age and repetition have secured general belief, who maintains that judicial mental attitude which arraigns the tenets of our sanitary faith before the bar of fact and reason, finds himself in many quandaries." One of the points raised: "We have been taught to consider the fly as dangerous as a cobra, but do we know, have we really proved for all time that it does the amount of damage with which it is ordinarily accredited?"—"Healthy Skepticism—Dogmas Fall Before Courageous Inquiry," in *Nation's Health*, 282-283 (May), 1923.

Toothbrush Drills May Not Save the Teeth.—A warning is given that much more than teaching the toothbrush habit is needed in order to preserve the teeth.—"Clean Teeth Not Always Sound," Dr. Harold DeW. Cross, in *Nation's Health*, 5:609 (Sept.), 1923.

Wanted: A Telephone Paragon.—She may be a rarity, but is worth looking for. Exchange "medical terms and diseases" in the following for "the activities of the health organization." Then check your pay roll to see if you are warranted in asking for what Dr. Alexander H. Schmitt sets forth as desirable: "An intelligent and efficient telephone operator must be conversant with medical terms and diseases, must be tactful, alert, cheerful, interested, obliging and polite. She must be able to deliver messages promptly and accurately, and use good judgment in imparting information."—"The Technique or Art of Administering a Hospital," *Hospital Progress*, 5:335-337 (Sept.), 1923.

Where to Get Lantern Slides.—A limited list of lantern slides on health subjects has been compiled by the National Health Council, 370 Seventh Avenue, New York City. Enclose a two cent stamp if you wish a copy.

Teaching the High Cost of Ill Health.—In the course of a discussion of the "acceptance by the average American citizen" of the offerings of science in the field of health Dr. Kelly says:

"One of the outstanding difficult problems of preventive medicine is that of bringing home the extent to which avoidable sickness, inadequate or improper physical training in childhood and preventable accidents all considered together, slow down our national productiveness; absorb time, money and energy that could otherwise be devoted to the greater expansion of a national cultural life; result in increased delinquency and crime; and in general add to the sum total of preventable human misery."—"Health Conservation Through the Ages," Eugene R. Kelley, M.D., *Nation's Health*, 253-257 (May), 1923.

When the County Fair Comes Again.—Some suggestions for "The Public Health Nurse at the County Fair" will interest other health workers. Brief reading list.—*Public Health Nurse*, 351-352 (July), 1924.

"A Book that Lays Ghosts."—To our collection of inviting titles, we add this phrase which heads a book review of "The Psychol-

ogy of Insanity." The review is as readable as the title. It appears in the initial issue of "Mental Health," a four page monthly published by the Mental Hygiene Society of Maryland at 31 South Calvert Street, Baltimore.

When You Start a New Hospital.—When you do this you will wish to consult "First Steps in Organizing a Hospital." There are three of its chapters for the publicity worker, wherein the high lights in his part of the job are reviewed: "Surverying the Community Preliminary to Hospital Construction," which in addition to better hospital planning means the fact gathering so important for successful publicity work; "Getting the Hospital Under Way," and "Financing New Hospital Construction." Brief reading lists follow each chapter.—"First Steps in Organizing a Hospital," Joseph J. Weber, The Macmillan Company, 1924, 205 pp., $2.75.

Again, the County Fair.—"How to do something" and "How to give information" are illustrated by a group of actual experiences, being largely plans or material prepared by the Studio of Stella Boothe. Nine illustrations.—"The County Fair Health Exhibit—What Shall It Tell?" *Trained Nurse and Hospital Review*, 73:129-135 (Aug.), 1924.

A Health Play Contest in High Schools.—"In order to stimulate interest in health and health training in high schools, the National Tuberculosis Association announces a playwriting contest for the school year of 1924-1925. The contest will be open to junior and senior high schools of the United States, and plays must deal with some aspect of individual community health or hygiene. The contest is organized through the affiliated state tuberculosis and public health associations."

The 15 page pamphlet describing the plan and outlining the conditions also explains the kinds of plays wanted; tells how to find material, and discusses the underlying principles in dramatic construction for aiding the high school playwrights. Copies are obtainable through the state tuberculosis associations or the National Tuberculosis Association, 370 Seventh Avenue, New York City.

PUBLIC HEALTH LEGISLATION

JAMES A. TOBEY, LL.B.

A CALL FOR SUGGESTIONS

During the next few months while Congress is not in session and there is no federal legislation to be reported, we should be glad to run in this column brief articles on legal subjects of special value to health officials and other sanitarians. In order to ascertain what type of material may be desired, we should be glad to receive suggestions and recommendations along these lines.

Court Decisions on Vaccination.—The Illinois Supreme Court has recently held in *Burroughs v. Mortenson*, 143 N. E. 457, that vaccination is not a condition precedent to the right of a child to attend school, and can not be made so either by a board of education or a board of health, though vaccination may be required in the case of an epidemic. This is the rule in Illinois, as decided by three previous court decisions on the subject, and is also the rule in Kansas and Wisconsin, where it has been held that a child can not be excluded from school because unvaccinated, in the absence of specific legislation. In Illinois it has been further decided that a city, or even the state, can not require vaccination except in emergencies. A much more liberal policy has been allowed in many other states, notably, Connecticut, where the court has decided that the legislature may authorize exclusion from school of the unvaccinated even when no smallpox is prevalent. A complete list, arranged by states, of all the known court decisions up to July 1, 1924, on vaccination is given in the *Journal of the American Medical Association* for August 9, 1924, page 463, together with an article discussing this whole subject. This paper, written by the associate editor, will be of considerable value to sanitarians and attorneys who have to deal with

the legal side of this problem, as it is, as far as we know, the most complete existing list of decisions regarding vaccination. Reprints will be supplied on request to the National Health Council, 370 Seventh Avenue, New York. The following is quoted from the article:

"Vaccination has, within reasonable limitations, been almost universally upheld by the courts as a proper exercise of this police power. It is, of course, the function of the courts to interpret and pass on the law as promulgated by the legislative branch of the government, and enforced and applied by the executive. I have here assembled a list of sixty-seven court decisions, representing twenty-eight states and the federal government, in which some phase of the vaccination problem has been passed upon. These cases, decided almost entirely by courts of last resort, range over nearly a hundred years, from the early decision in *Hazen v. Strong*, decided in Vermont in 1830, to the most recent case of which we had record when this article was prepared, that of *People ex rel. Hill v. Board of Education*, decided by the Michigan Supreme Court late in 1923.

"In 1904, the United States Supreme Court in the case of *Jacobson v. Massachusetts* upheld the power of a state to enact compulsory vaccination laws. Some years previously this court had remarked *obiter dictum*, that is, on the side and not directly material to the case in question, in *Lawton v. Steele* that the state under its police power may order compulsory vaccination of children. Again, in 1922, in *Zucht v. King* the United States Supreme Court upheld the right of the state to delegate to a municipality the power to exclude an unvaccinated child from school. In the *Jacobson v. Massachusetts* case, the supreme court lays particular stress on the fact that it is the function of the legislature and not of the courts to determine in the first instance whether vaccination is a proper and efficacious remedy for the prevention of smallpox and the protection of the public health. In this connection, reference is made to the New York case of *Viemeister v. White*, which is quoted at length.

"Like all health laws coming under the police power, the essential requirement of a valid vaccination law is that it must be reasonable. For instance, to require that any one at any time could be seized and forced to undergo compulsory vaccination would be held unreasonable by most state courts. But to require that, during an epidemic or threatened epidemic of smallpox, all persons who had been exposed or reliably suspected of exposure should either submit to vaccination or be quarantined would be entirely reasonable and upheld by practically all courts. Such power may either be expressly granted by the legislature, or it may be sometimes implied from more general legislation regarding the protection of the public health. If there is written legislation, such a law is fairly certain to be considered favorably."

An article on Vaccination Law Enforcement appears in the *Kentucky Health Workers' Bulletin* for August, 1924.

Legal Aspects of Milk Control.—Another list of court decisions on a public health subject is that given in the *Public Health Reports* of the United States Public Health Service for July 18, 1924. In this case, the subject is milk control and here, unlike vaccination, there is a general uniformity of opinion by the courts of last resort of some 31 states and the federal government, which have upheld the regulation of milk as proper and reasonable under the police power.

The delegation of control by the state to local boards is valid, as is the fixing of standards for milk. Inspection of dairies and cattle, tuberculin test requirements, prevention of adulteration, licensing of dairies and dealers, summary destruction of impure milk, requirement for proper receptacles, and pasteurization or certification laws have all been upheld.

Reprints of this article, which lists 121 court decisions, may be obtained from the United States Public Health Service, Washington, D. C., or from the Associate Editor in care of the JOURNAL.

"Contagious" and "Communicable."—The United States District Court for Massachusetts has upheld a regulation of the Public Health Service, which declares that the word "contagious" shall be regarded as synonymous with "communicable." In this case, that of *ex parte Liang Buck Chew*, 296 Fed. 182, a Chinese who had clonorchiosis, was held for deportation. He attempted to secure his release by habeas corpus, but the court dismissed the petition. Clonorchiosis is a disease caused by a parasite which occurs in raw fish and it is sometimes known as flukeworm of the liver. While the court believed that there

was little likelihood of this disease becoming dangerous in this country and stated that the health officials were probably overcautious, in this case the underlying intention of the statute, to prevent the introduction of disease into the country, was upheld. The court stated, "the regulation making 'contagious' equivalent to 'communicable' seems pretty broad; but, assuming that the regulation be given a reasonable construction, the court is not prepared to say that it is invalid." A comment on the case appears in the *California Weekly Health Bulletin* for August 2, 1924.

A Venereal Disease Ordinance.—The editor has forwarded to us for comment an ordinance relating to the venereal diseases which was adopted by the Board of Health of East Orange, New Jersey, on July 31, 1924. This ordinance, which is very comprehensive and progressive, provides for a medical examination of any person reported by a physician, nurse, social welfare worker, health inspector, or court officer as having or suspected of having a venereal disease, whether or not in a communicable stage. Persons convicted of sex offenses, patients who have ceased treatments, and persons known to have been exposed, or as sources of infection, may also be examined. A person who refuses to be examined is required to be isolated at home until discharged as no longer in a communicable stage, the last term being defined. Further provisions in the ordinance deal with patent medicines dispensed by druggists for these diseases and the prohibition of advertising of remedies.

Laws relating to the examination and detention of the venereally infected have been before the courts in a dozen or more states, though, as far as we know, never in New Jersey. Reasonable regulations regarding examination have generally been upheld as valid under the police power of the state. It is necessary, however, that health officials must have and be able to prove reasonable grounds for suspicion of the existence of these diseases before an examination is ordered. A health officer in Michigan was held personally liable for damages due to having such examination made without reasonable cause, in spite of the fact that the individual was actually found to have gonorrhea. *Rock v. Carney*, 216 Mich. 280, 185 N. W. 798. In Iowa, the right of examination seems to have been denied, but this is the only instance on record. *Wragg v. Griffin*, 170 N. W. 400. Whether or not the methods provided in this East Orange ordinance would be considered reasonable will be a matter for the court to decide in a cause of action brought before it. In the opinion of the writer all provisions of this ordinance are reasonable except that which provides that anyone suspected by numerous persons may be examined, which is somewhat drastic and an infringement on the constitutional guarantees of personal liberty.

An interesting article on the right of examination appears in the February, 1924, *Bulletin* of the Division of Venereal Diseases of Tennessee.

CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

October 6-9, American National Red Cross, Washington, D. C.

October 6-13, American Hospital Association, Buffalo, N. Y.

October 7-9, American Occupational Therapy Association, Buffalo, N. Y.

October 8-10, American Civic Association, Washington, D. C.

October 13-14, Oklahoma Public Health Association, Oklahoma City, Okla.

October 14-16, American Child Health Association, Kansas City, Mo.

October 15-17, American Association of Railway Surgeons, Chicago, Ill.

October 16-24, Playground and Recreation Association of America, Atlantic City, N. J.

October 20-23, American Public Health Association, Detroit, Mich.

October 20-24, American College of Surgeons, New York, N. Y.

November 4-7, Texas Association of Sanitarians, Houston, Texas.

November 10-12, National Municipal League, Cambridge, Mass.